

THE ROYAL TOUR TO Egypt

with

Dr. Zahi Hawass

the Legendary Archaeologist



**MULTIPLE TOUR DATES
IN 2020 & 2021**

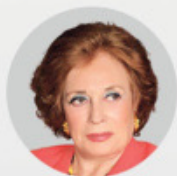
This is the most exciting tour to Egypt ever offered! Led by the world's most famous archaeologist, Dr. Zahi Hawass, The Royal Tour to Egypt provides unparalleled access to the wonders of Ancient Egypt. Unlike conventional tours, only The Royal Tour offers its participants VIP entry to areas of the ancient sites closed to the general public. Visit the Giza Pyramids and Luxor Temple outside of regular opening hours for a more intimate and crowd-free experience. Have a once-in-a-lifetime chance to stand between the paws of the Great Sphinx instead of seeing it from the viewing platform.

You will hear secrets never told before and spend time in the esteemed company of Dr. Mostafa Waziri, Egypt's Head of Antiquities. Former First Lady, Mrs. Jehan Sadat, will host you in the residence of Egypt's late president Anwar Sadat – an experience normally reserved for royalty and heads of state. The tour also includes a highly sought-after camera permit allowing you to photograph sacred spaces in the Valley of the Kings, the Egyptian Museum in Cairo and more!



Dr. Mostafa Waziri
Egypt's Head of Antiquities

You will never forget this tour for the rest of your life.



Mrs. Jehan Sadat
Egypt's Former First Lady

Come to visit Egypt with Archaeological Paths. They really are the best to visit my country.

**Travel like a Pharaoh and experience
Egypt like no one else with first-class
service from start to finish!**



Dr. Zahi Hawass

No one can tour Egypt like this – except for you when you come and join me. You will visit many unique sites that very few people can see. You will be treated like royalty! That is why we call it the Royal Tour.



**ARCHAEOLOGICAL
PATHS**

**Tour dates
and more information:**

www.royalegypt.com

contact@archaeologicalpaths.com
US phone: 917-719-1974

VISIT...

LANZAROTE
Caliente.COM

In Search of the Four Corners Potato

ARCHAEOLOGY

archaeology.org

A publication of the Archaeological Institute of America

March/April 2020

Castles of the Irish Kings

Shark Hunting in Ancient Peru

Egypt's Outlaw God

Mapping an Underwater Nuclear Battlefield

Plus:

Bronze Age Monkey Business

Mexican Mammoth Hunt

Viking Boat Burials

Caribbean Clam Bake





It's Caravan's Panama Canal Cruise & Tour! 2020 Is Your Year to Go. Visit Caravan.com, Call 1-800-CARAVAN

Panama 8-Day Tour \$1295

+ tax, fees. USD

Rainforests, Beaches, Panama Canal Cruise

You are invited to Panama on a fully guided tour with Caravan. Includes all hotels, all meals, and all activities, plus take two cruises on the Panama Canal. **caravan**

Day 1 Panama City, Panama

Welcome to fun, vibrant Panama. Caravan provides airport transfers.

Day 2 Old Panama, Miraflores

Visit the ruins of Panama Viejo (Old Panama), the city founded by the Spanish in 1519. Visit the Canal Museum at Miraflores, overlooking the Panama Canal locks. Learn about the Canal construction and operation.

Day 3 Panama Canal Cruise

Boat ride on Gatun Lake. See the lush jungle watershed region of the Panama Canal. Cruise through jungle canals and by hilltop islands. Look for monkeys. Enjoy a relaxing two night stay at your resort located in the rainforest.

Day 4 Panama Canal Cruise

Today an unforgettable adventure as you cruise more of the Panama Canal. Cruise by the Bridge of the Americas, pass through Miraflores and Pedro Miguel Locks, and cross the Continental Divide. Get up-close views of the canal locks.

Day 5 Embera Tribe, Playa Bonita

Cruise on the Chagres River to visit an Embera tribal village. The Embera inhabit the rainforests of Panama. Then, visit a live jungle sloth exhibition. Continue to your beach hotel for a relaxing two night stay on the Pacific Coast.

Day 6 Playa Bonita

Entire day at leisure to enjoy your beach resort. Swim in your hotel's infinity pool. Time to beachcomb and enjoy your resort's amenities.

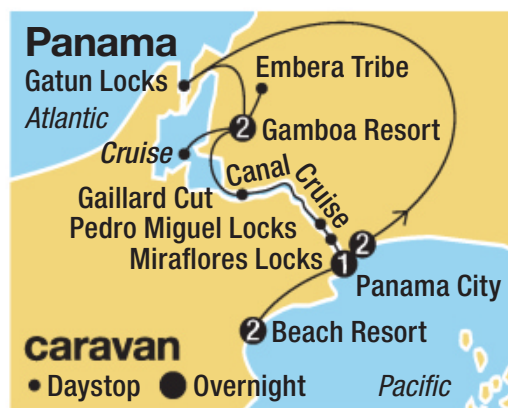
Day 7 Handicrafts, Museum

Visit a Kuna tribal marketplace. Shop for colorful mola embroidery and handicrafts. Visit the Museum of Biodiversity, designed by Frank Gehry. Enjoy a farewell dinner.

Day 8 Panama City

Tour ends after breakfast at your hotel. Caravan provides airport transfers. Hasta la Vista—Thanks for vacationing with Caravan!

Full Itinerary at caravan.com



Hotels - listed by day

- 1,2 **Panama City** Marriott Courtyard
- 3,4 **Gamboa** Rainforest Resort
- 5,6 **Playa Bonita** Westin Resort
- 7 **Panama City** InterContinental Miramar

Dear Vacation Traveler,

Welcome to a great vacation at an affordable price. These quality tours feature complete sightseeing, professional tour directors, and great itineraries. Discover for yourself why smart shoppers and experienced travelers choose Caravan. Happy Travels! **caravan**

About Caravan Tours

Caravan began selling fully guided tours in 1952. We have been under the same family management and ownership ever since.



The Golden Frog, Panama's National Animal, Brings You Good Luck

TM

Choose An Affordable Tour

Costa Rica	9 days	\$1295
Panama & Canal	8 days	\$1295
Guatemala w/ Tikal	10 days	\$1395
Yellowstone	8 days	\$1495
Grand Canyon	8 days	\$1595
California Coast	9 days	\$1995
New England	8 days	\$1595
Canadian Rockies	9 days	\$1995
Nova Scotia & PEI	10 days	\$1695
Per Person U.S.Dollars, + tax, fees, airfare		

FREE 24 Page Brochure
1-800-caravan
caravan.com



caravan

FULLY GUIDED TOURS SINCE 1952

CONTENTS



48 The wreck of USS *Lamson*, a U.S. Navy vessel sunk during the July 1, 1946, nuclear test in Bikini Atoll

FEATURES

24 INSIDE A MEDIEVAL GAELIC CASTLE

A tiny Irish island holds the secrets of an unknown royal way of life

BY JARRETT A. LOBELL

32 LORD OF THE OASIS

In Egypt's Western Desert, worship of the mysterious god Seth thrived long after it waned elsewhere

BY BENJAMIN LEONARD

38 THE FOUNDER'S TOMB

Frescoes discovered in a Jordanian village narrate the early days of a once-cosmopolitan city on the eastern edge of the Roman Empire

BY DANIEL WEISS

42 REMEMBERING THE SHARK HUNTERS

Unique burials show how ancient Peruvians celebrated dangerous deep-sea expeditions

BY ERIC A. POWELL

48 ATOMIC AGE GHOST FLEET

The submerged remains of two massive bomb tests in the Pacific illustrate the potential horrors of nuclear war

BY SAMIR S. PATEL

Cover: A view of the Rock, Lough Key, Ireland
PHOTO: PHOTO BY MALTE HEITMÜLLER/
@MALTEHEITMUELLER

TEARS FROM A VOLCANO

Uniquely American stone ignites romance

On May 18, 1980, the once-slumbering Mount St. Helens erupted in the Pacific Northwest. It was the most impressive display of nature's power in North America's recorded history. But even more impressive is what emerged from the chaos... a spectacular new creation born of ancient minerals named Helenite. Its lush, vivid color and amazing story instantly captured the attention of jewelry connoisseurs worldwide. You can now have four carats of the world's newest stone for an absolutely unbelievable price.

Known as America's emerald, Helenite makes it possible to give her a stone that's brighter and has more fire than any emerald without paying the exorbitant price. In fact, this many carats of an emerald that looks this perfect and glows this green would cost you upwards of \$80,000. Your more beautiful and much more affordable option features a perfect teardrop of Helenite set in gold-covered sterling silver suspended from a chain accented with even more verdant Helenite.

**EXCLUSIVE
FREE**

Helenite Earrings
-a \$129 value-
with purchase of
Helenite Necklace



Limited Reserves. As one of the largest gemstone dealers in the world, we buy more carats of Helenite than anyone, which lets us give you a great price. However, this much gorgeous green for this price won't last long. Don't miss out. Helenite is only found in one section of Washington State, so call today!

Romance guaranteed or your money back. Experience the scintillating beauty of the *Helenite Teardrop Necklace* for 30 days and if she isn't completely in love with it send it back for a full refund of the item price. You can even keep the stud earrings as our thank you for giving us a try.

Helenite Teardrop Necklace (4 1/4 ctw) ~~\$299*~~ Only \$129 +S&P

Helenite Stud Earrings (1 ctw) \$129 +S&P

Helenite Set (5 1/4 ctw) \$428* Call-in price only \$129 +S&P
(Set includes necklace and stud earrings)

Call now and mention the offer code to receive FREE earrings.

1-800-333-2045

Offer Code HEN259-01

You must use the offer code to get our special price.

Stauer®

14101 Southcross Drive W., Ste 155, Dept. HEN259-01,
Burnsville, Minnesota 55337 www.stauer.com



* Special price only for customers using the offer code versus the price on Stauer.com without your offer code.

- 4 1/4 ctw of American Helenite and lab-created DiamondAura®
- Gold-finished .925 sterling silver settings
- 16" chain with 2" extender and lobster clasp

**Limited to the first
1600 orders
from this
ad only**

*4 carats of
shimmering
Helenite*



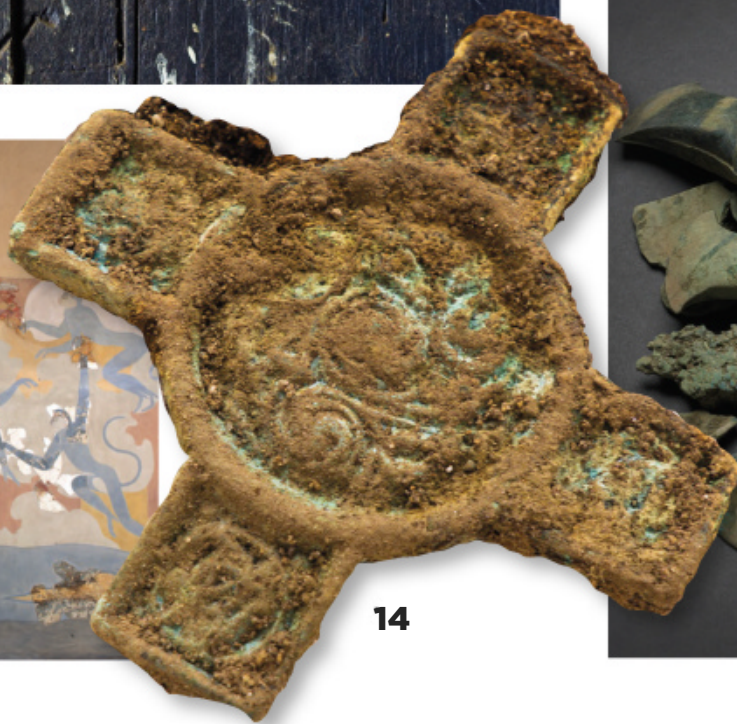
*"I love these pieces...
it just glowed...
so beautiful!"*

— S.S., Salem, OR



Necklace
enlarged
to show
luxurious
color

Stauer... *Afford the Extraordinary.®*



DEPARTMENTS

4 EDITOR'S LETTER

6 FROM THE PRESIDENT

8 LETTERS

A lifelong journey in archaeology, behind the scenes in Petra, and the origins of knitting

9 DIGS & DISCOVERIES

Assyrian academia, the first figurative painters, new Viking boat burials, Bronze Age weapon recycling, and Ethiopia's Christian empire

22 AROUND THE WORLD

Neolithic chewing gum DNA, the first sled dogs, and swelling the ranks of the Terracotta Army

68 ARTIFACT

Ahead of the curve

LETTER FROM THE FOUR CORNERS

57 IN SEARCH OF PREHISTORIC POTATOES

Native peoples of the American Southwest dined on a little-known spud at least 10,000 years ago

BY LYDIA PYNE

ARCHAEOLOGY.ORG

■ **MORE FROM THE ISSUE** To see more images of burials and artifacts from Pampa la Cruz, Peru, go to archaeology.org/pampa.

■ **ARCHAEOLOGICAL NEWS** Get daily headlines from around the world, and sign up for our e-Update.

■ **FOLLOW US**



■ **INTERACTIVE DIGS** Track ongoing work at interactivedigs.com.

LIVING ON THE EDGE

Popular interest in the past is often focused on the political or spiritual centers of ancient cultures—capitals such as Rome or Teotihuacan, for example, or the religious complexes at Saqqara in Egypt or on the Acropolis in Athens. But outside those centers lived people whose beliefs at times reflected, and at other times challenged, those held by the inhabitants of such power centers. Several of the stories in this issue investigate the customs of people who thrived on the far reaches of some of the ancient world's great empires.



"The Founder's Tomb" shares the discovery of a vibrantly frescoed burial chamber in what is now Jordan. The tomb's paintings—some of them humorous—tell the story of the founding of the city of Capitolias, which, during the late first and second centuries A.D., was on the edge of the Roman Empire. Nevertheless, Roman customs, such as the worship of Greco-Roman deities and the wearing of a toga to denote citizenship, were strongly adhered to in this cosmopolitan city.

It's difficult to imagine a place more on the fringe than the Dakhleh Oasis in Egypt's Western Desert, hundreds of miles from the political heartland of the Nile Valley. "Lord of the Oasis" explores worship of the god Seth, a deity who had many incarnations, multiple personalities, and varying popular appeal over the more than three millennia during which he was venerated in the oasis and throughout the Egyptian world.

Like the rulers of Rome and Egypt, the lords of the Moche world lived in urban centers, theirs in the valleys near the coast of what is now Peru. But long before the Moche arrived, traditions tied to dangerous deep-sea fishing and whaling expeditions formed an essential part of local belief systems on the Peruvian coast. "Remembering the Shark Hunters" illuminates how these beliefs and their accompanying rituals persisted for millennia and endured in the new Moche world.

For many, western Ireland may appear to have been very much at the edges of medieval Europe, particularly when it came to the construction of castles, those potent symbols of medieval European royal life. Some scholars have argued that the Irish kings did not build castles at all, but the new discoveries made by the archaeologists featured in "Inside a Medieval Gaelic Castle" may overturn this long-held assumption and offer a new look at how the lords of western Ireland ruled their part of the island.

Jarrett A. Lobell
Editor in Chief

ARCHAEOLOGY

Editor in Chief

Jarrett A. Lobell

Deputy Editor

Eric A. Powell

Senior Editors

Benjamin Leonard

Daniel Weiss

Associate Editor

Marley Brown

Editorial Assistant

Malin Grunberg Banyasz

Creative Director

Richard Bleiweiss

Maps

Ken Feisel

Contributing Editors

Roger Atwood, Paul Bahn,

Bob Brier, Karen Coates,

Andrew Curry, Blake Edgar,

Brian Fagan, David Freidel,

Tom Gidwitz, Andrew Lawler,

Stephen H. Lekson,

Jerald T. Milanich, Heather Pringle,

Kate Ravilious, Neil Asher

Silberman, Julian Smith,

Nikhil Swaminathan,

Jason Urbanus, Claudia Valentino,

Zach Zorich

Publisher

Kevin Quinlan

Director of Circulation and Fulfillment

Kevin Mullen

Director of Integrated Sales

Gerry Moss

Account Manager

Karina Casines

Newsstand Consultant

T.J. Montilli

NPS Media Group

Office Manager

Malin Grunberg Banyasz

For production questions

contact materials@archaeology.org

Editorial Advisory Board

James P. Delgado, Ellen Herscher,

Ronald Hicks, Jean-Jacques Hublin,

Mark Lehner, Roderick J. McIntosh,

Susan Pollock, Kenneth B. Tankersley

ARCHAEOLOGY MAGAZINE

36-36 33rd Street, Long Island City, NY 11106
tel 718-472-3050 • fax 718-472-3051

Subscription questions and address changes should be sent to Archaeology, Subscription Services, P.O. Box 433091 Palm Coast, FL 32143 toll free (877) ARKY-SUB (275-9782) or subscriptions@archaeology.org

“To you, it’s the **perfect lift chair**.
To me, it’s the **best sleep chair** I’ve ever had.”

— J. Fitzgerald, VA



You can’t always lie down in bed and sleep. Heartburn, cardiac problems, hip or back aches – and dozens of other ailments and worries. Those are the nights you’d give anything for a comfortable chair to sleep in: one that reclines to exactly the right degree, raises your feet and legs just where you want them, supports your head and shoulders properly, and operates at the touch of a button.

Our **Perfect Sleep Chair®** does all that and more. More than a chair or recliner, it’s designed to provide total comfort.

Choose your preferred heat and massage settings, for hours of soothing relaxation. Reading or watching TV? Our chair’s recline technology allows you to pause the chair in an infinite number of settings. And best of all, it features a powerful lift mechanism that tilts the entire chair forward, making it

easy to stand. You’ll love the other benefits, too. It helps with correct spinal alignment and promotes back pressure relief, to prevent back and muscle pain. The overstuffed, oversized biscuit style back and unique seat design will cradle you in comfort. Generously filled, wide armrests provide enhanced arm support when sitting or reclining. **It even has a battery backup in case of a power outage.**

White glove delivery included in shipping charge. Professionals will deliver the chair to the exact spot in your home where you want it, unpack it, inspect it, test it, position it, and even carry the packaging away! You get your choice of stain and water repellent custom-manufactured Duralux with the classic leather look or plush microfiber in a variety of colors to fit any decor. **Call now!**

The Perfect Sleep Chair®

1-888-761-0087

Please mention code 112387 when ordering.



REMOTE-CONTROLLED
EASILY SHIFTS FROM FLAT TO
A STAND-ASSIST POSITION



Long Lasting DuraLux



DuraLux II Microfiber



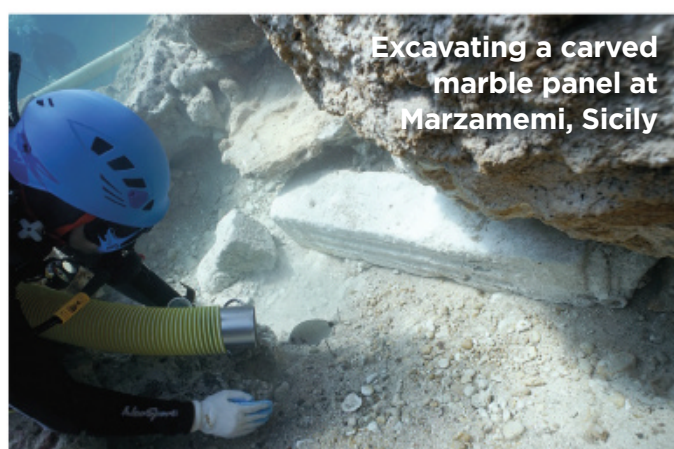
Because each Perfect Sleep Chair is a custom-made bedding product, we can only accept returns on chairs that are damaged or defective.

© 2020 firstSTREET for Boomers and Beyond, Inc.

FROM THE PRESIDENT

THE AIA: A BIG TENT

The Archaeological Institute of America's annual meeting, which takes place the first weekend in January, offers an amazing smorgasbord for the archaeology lover. Every year, the meeting illustrates the AIA's mission to excavate, educate, and advocate. Of the many papers that focused on aspects of excavation this past January, I single out here the panel on the shipwreck at Marzamemi off the southern coast of Sicily that you first had the opportunity to read about in "Shipping Stone" in the September/October 2018 issue of *ARCHAEOLOGY*. One of several ancient wrecks of ships with cargoes of monumental stone architectural elements that had been identified by the early 1960s,



Excavating a carved marble panel at Marzamemi, Sicily

this vessel carried prefabricated pieces of carved marble church architecture dating to the early Byzantine era. In addition to providing a fascinating look at the innovative technologies used in underwater archaeology, the project, which is led by Justin Leidwanger of Stanford University, with a team that includes newly elected AIA First Vice President Elizabeth S. Greene of Brock University, has shown that the cargo was neither a complete architectural kit for a single religious structure, as originally thought, nor a random set of marble elements. Rather, the wreck contains a deliberately assembled collection of multicolored decorative marbles carved in the East and likely intended to embellish a church in the West that would have been built of more humble local stone. Located at the crossroads of Mediterranean trade, the "church wreck" promises to advance archaeologists' understanding of economics, politics, and religion during a transformative period.

On the education side, our annual gathering included several events for the public and for non-AIA members. ArchaeoCon, a daylong festival, drew some 400 people from the greater Washington, D.C., area and featured maritime archaeologist James Delgado, historical archaeologist and educator Alexandra Jones, and TV personality Josh Gates, host of *Expedition Unknown*. The AIA also welcomed archaeology educators from many of our sister organizations for an intense one-day summit, which was part of a larger effort to foster a community and forum for the discussion of archaeology education. You can read more about these activities in "Dispatches," beginning on page 65 in this issue.

Finally, in terms of advocacy, the AIA sponsored a panel on the 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transport of Ownership of Cultural Property, the international treaty intended to combat the illegal trade in looted cultural artifacts. On the 50th anniversary of the 1970 convention, the panel assessed its impact, both intended and unintended, and identified challenges that still lie ahead in the fight against the looting of archaeological sites.

Laetitia La Follette

President, Archaeological Institute of America

ARCHAEOLOGICAL INSTITUTE of AMERICA



OFFICERS

PRESIDENT

Laetitia La Follette

First Vice President

Elizabeth S. Greene

Vice President for Cultural Heritage

Brian Daniels

Vice President for Outreach and Education

Laura Rich

Vice President for Research and Academic Affairs

Thomas Tartaron

Vice President for Societies

Connie Rodriguez

Treasurer

David Seigle

Chief Operating Officer

Kevin Quinlan

GOVERNING BOARD

Elie Abemayor
David Adam
Deborah Arnold
Jeanne Bailey
David Boochever
Thomas Carpenter
Jane Carter, ex officio
Arthur Cassanos
Larry Cripe
Joshua Gates
Elizabeth M. Greene
Julie Herzig Desnick
Mark Hurst
James Jansson
Morag Kersel
Mark Lawall
Thomas Levy
Gary Linn
Jarrett A. Lobell, ex officio
Kathleen Lynch
Richard MacDonald
Tina Mayland
H. Bruce McEver
Barbara Meyer
John Papadopoulos
Sarah Parcak
Kevin Quinlan, ex officio
Betsey Robinson
Kim Shelton
Thomas Sienkewicz
Patrick Suehnholz
Maria Vecchiotti
John Yarmick

Past President

Jodi Magness

Trustees Emeriti

Brian Heidtke
Norma Kershaw
Charles S. La Follette

Legal Counsel

Mitchell Eitel, Esq.
Sullivan & Cromwell, LLP

ARCHAEOLOGICAL INSTITUTE of AMERICA
44 Beacon Street • Boston, MA 02108
archaeological.org

Simplicity. Savings. Stauer®SMART Best value for a Smartwatch...only \$99!

Smarten up

Some smartwatches out there require a PhD to operate. Why complicate things? Do you really need your watch to pay for your coffee? We say keep your money in your pocket, not on your wrist. **Stauer®SMART** gives you everything you need and cuts out the stuff you don't, including a zero in the price.

Keep an eye on your health with heart rate, blood pressure** and sleep monitoring capabilities. Track your steps and calories burned. Set reminders for medicine and appointments. **StauerSMART** uses Bluetooth® technology to connect to your phone. When a notification or alert arrives, a gentle buzz lets you know right away.

When it comes to battery life, **StauerSMART** has one of the most efficient batteries available--giving you up to 72 hours of power. Most Smartwatches need to be charged every 24 hours. **StauerSMART** can get you through a three-day weekend without needing a charge.

This is the smarter Smartwatch. And, at **only \$99**, the price is pretty smart too.

Satisfaction guaranteed or your money back. Try **StauerSMART** risk-free for 30 days. If you aren't perfectly happy, send it back for a full refund of the item price.

Stauer®SMART

- Track steps and calorie burn
- Monitor heart rate, blood pressure & sleep
- Set reminders for medicine & appointments
- Get notified of emails & text messages
- Personalize the dial with your favorite pic
- Up to 72 hours of battery life per charge
- Supports Android 4.4+, iOS8.2 & Bluetooth 4.0+

Stauer® SMART \$299†

Offer Code Price **\$99** + S&P **Save \$200**

You must use the offer code to get our special price.

1-800-333-2045

Your Offer Code: STW158-01

Please use this code when you order to receive your discount.



Rating of A+



• Supports Android 4.4+, iOS8.2 & Bluetooth 4.0+ • Silicone strap • Touchscreen with digital timekeeping • Stopwatch timer • Heart rate, blood pressure & sleep monitor • Fitness tracker • Notifications: text, email, social media, & calendar alerts • Alarm clock • Water resistant to 3 ATM • USB charger included

Stauer® 14101 Southcross Drive W., Ste 155, Dept. STW158-01,
Burnsville, Minnesota 55337 www.stauer.com

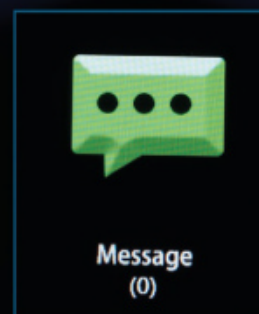
* Please consult your doctor before starting a new sport activity. A Smartwatch can monitor real-time dynamic heart rates, but it can't be used for any medical purpose.

† Special price only for customers using the offer code versus the price on Stauer.com without your offer code.

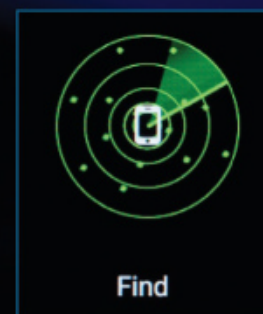
3Xs the Battery Life of the top-selling Smartwatch



Stauer®SMART gives you everything you want for **only \$99...** and nothing you don't.



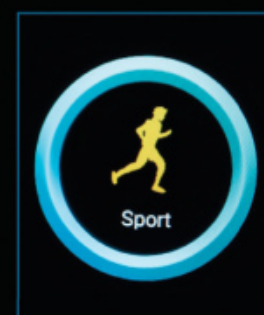
Emails and texts alerts



Find my phone



Monitor heart rate



Track steps and calories

Stauer... Afford the Extraordinary.®

FROM OUR READERS

SHARING THE PAST

The range of topics in the November/December 2019 issue was superb, and you hit some of my favorite subjects—Petra, Babylon, English sites. But my favorite article was “Artists of the Dark Zone.” Will Hunt exemplified, I feel, what archaeology is all about: taking an image, an object, something created by the hands of others in the near or distant past and connecting it with culture, religion, and daily life.

I wanted to major in archaeology in college, but most schools were too expensive and beyond the salaries of my parents, a dress factory worker and a house painter in the late 1960s. One day my dad was painting at the Pennsylvania State Museum in Harrisburg and struck up a conversation with the archaeologist there about his daughter who wanted to study the science. The archaeologist said there were few jobs (especially for women) on digs at that time. He also added that I should never lose interest in the field, but keep it as a hobby. I was disappointed! I wanted to get dirty digging up the past!

I eventually chose journalism, which I found to be almost as fulfilling, digging

up facts and information. Today, physical limitations would hinder my work as an archaeologist, but I find that I can continue work I love as a freelance writer behind a computer screen and keyboard. And, most importantly, I can continue to nurture my love for archaeology as an armchair archaeologist through magazines such as *ARCHAEOLOGY*.

Nancy Godfrey
Shippensburg, PA

A JOURNEY TO JORDAN

As a member of the Archaeological Institute of America's society at Stanford University in Palo Alto, California, I found your article “Beyond Petra” (November/December 2019) covering the new excavations there exciting. My husband and I were once guests of a longtime friend, Roger G. Harrison, the former ambassador to Jordan. Through him, we met Dr. Safwan Tell, Jordan's Director General of Antiquities. He spoke to me in Turkish, which he had learned while studying art history at the University of Istanbul. We knew many of the same people, as I had earned my degree in classical archaeology from that university. Dr. Tell accompanied us to the archaeological museum and proudly showed us its myriad artifacts. We visited the theater in Petra and talked with stonemasons at work. He later sent me the multivolume set *Studies in the History and Archaeology of Jordan*.

I thoroughly enjoy reading your

magazine with its fresh and exciting discoveries all over the world. Thank you.

Liyuza Eisbach
Former archaeologist
Hagia Sophia Museum
Istanbul, Turkey

TEXTILE EXPERTISE

Spindle whorls are actually for hand spinning of fiber for weaving, not knitting (“Inca Power Politics,” January/February 2020). The origins of knitting are still vague, with the current earliest examples being recovered from tombs in Spain dating to the eleventh century. The Spanish brought knowledge of knitting with them to South America. It was learned by indigenous people who lived and worked around the missions and plantations.

Doreen McLaughlin
Monument, CO

SUBSCRIBER ALERT

We would like to alert you that we have seen an increase in the number of fraudulent subscription offers, renewal notices, and invoices our readers are receiving from companies that are not authorized agents of *ARCHAEOLOGY* magazine. If you receive a notice that you are unsure of, please contact Subscription Services toll-free at (877) 275-9782. This illegal practice, of which many magazines are victims, damages our reputation and harms our subscribers, and we are continually on alert. We ask for your help in doing the same.

ARCHAEOLOGY welcomes mail from readers. Please address your comments to *ARCHAEOLOGY*, 36-36 33rd Street, Long Island City, NY 11106, fax 718-472-3051, or e-mail letters@archaeology.org. The editors reserve the right to edit submitted material. Volume precludes our acknowledging individual letters.



Magazine Publishers of America

ARCHAEOLOGY (ISSN 0003-8113) is published bimonthly for \$29.95 by the Archaeological Institute of America, 36-36 33rd Street, Long Island City, NY 11106. Periodicals postage paid at Long Island City, NY, and additional mailing offices. POSTMASTER: Send address changes to *Archaeology*, P.O. 433091, Palm Coast, FL 32143.

Subscriptions should be addressed to *Archaeology*, Subscription Services, P.O. 433091, Palm Coast, FL 32143, toll-free (877) ARKY-SUB (275-9782), subscription@archaeology.org. \$29.95 per volume. Single numbers, \$5.99. Foreign

and Canadian subscriptions, \$44.95; includes all government taxes (130277692-RT). Canadian Publication Agreement #1373161. Allow six weeks for processing new subscriptions. Send manuscripts and books for review to 36-36 33rd Street, Long Island City, NY 11106 or editorial@archaeology.org. All manuscripts are reviewed by experts. Advertisements should be sent to the Advertising Director, 36-36 33rd Street, Long Island City, NY 11106, (718) 472-3050, advertising@archaeology.org. We are not responsible for unsolicited manuscripts and photographs. For subscription problems please call (877) 275-9782; AIA members with subscription problems should call the membership office at (857) 305-9350. All rights reserved. Printed in USA. The views and opinions expressed do not necessarily reflect the policy of the AIA or *ARCHAEOLOGY*.

©2020 The Archaeological Institute of America

DIGS & DISCOVERIES

VIKING BOAT BURIALS, SUPERNATURAL CAVE ART, BRONZE AGE MONKEYS...AND MUCH MORE

ANCIENT ACADEMIA

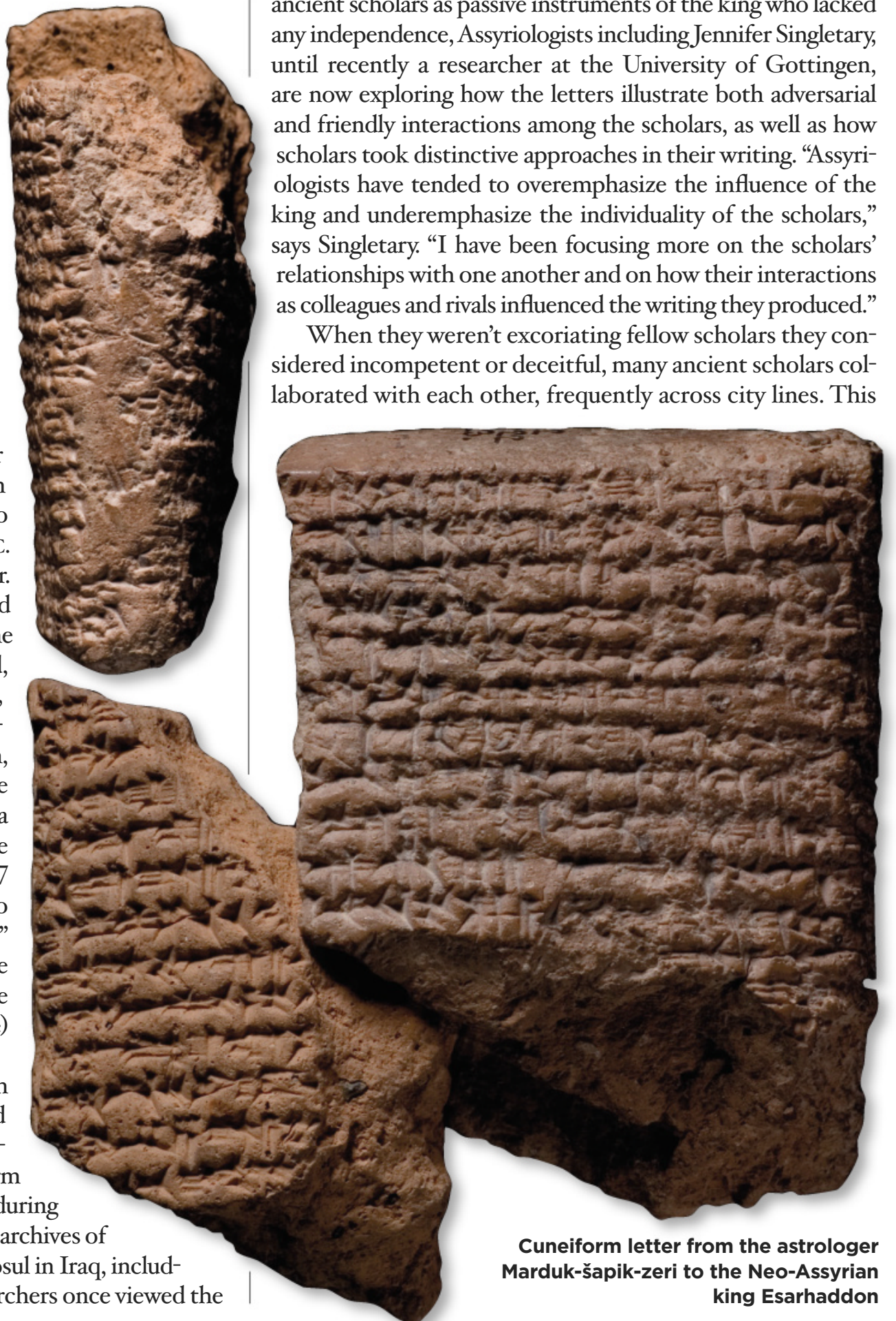
In some respects, the life of a Mesopotamian scholar in the seventh century B.C. was not so very different from that of a modern academic. While the former might be responsible for reporting on celestial phenomena and whether they augur well for the king's reign, and the latter might be searching for evidence of a new subatomic particle to better understand the origins of the universe, in either case, one's reputation among colleagues is paramount.

Let's take, for example, the lot of an unnamed astrologer who was subjected to a vicious onslaught of peer review from some of the Neo-Assyrian Empire's top minds after claiming to have sighted Venus around 669 B.C. In a letter to the king Esarhaddon (r. 680–669 B.C.), a fellow stargazer named Nabû-ahhe-eriba, who was part of the inner circle of royal scholars, inveighed, "(He who) wrote to the king, my lord, 'The planet Venus is visible, it is visible (in the month Ad)ar,' is a vile man, an ignoramus, a cheat!" Slightly more charitable, though still cutting, was a scholar named Balasî, who tutored the crown prince Ashurbanipal (r. 668–627 B.C.). "(T)he man who wrote (thus) to the king, (my lord), is in ignorance," Balasî informed Esarhaddon. "The ig(noramus)—who is he?...I repeat: He does not understand (the difference) between Mercury and Venus."

These quotations are excerpts from just two of around 1,000 letters and reports written by scholars to Esarhaddon and Ashurbanipal in cuneiform on clay tablets that were discovered during nineteenth-century excavations of the archives of the Assyrian capital, Nineveh, near Mosul in Iraq, including Ashurbanipal's library. While researchers once viewed the

ancient scholars as passive instruments of the king who lacked any independence, Assyriologists including Jennifer Singletary, until recently a researcher at the University of Gottingen, are now exploring how the letters illustrate both adversarial and friendly interactions among the scholars, as well as how scholars took distinctive approaches in their writing. "Assyriologists have tended to overemphasize the influence of the king and underemphasize the individuality of the scholars," says Singletary. "I have been focusing more on the scholars' relationships with one another and on how their interactions as colleagues and rivals influenced the writing they produced."

When they weren't excoriating fellow scholars they considered incompetent or deceitful, many ancient scholars collaborated with each other, frequently across city lines. This



Cuneiform letter from the astrologer Marduk-šapik-zeri to the Neo-Assyrian king Esarhaddon

was particularly important when it came to astronomical observations, whose success could depend on the local weather. “Now there are clouds everywhere; we do not know whether the eclipse took place or not,” Bel-ušezib, a Babylonian scholar based in Nineveh, told Esarhaddon. “Let the lord of kings write to Assur and all the cities, to Babylon, to Nippur, to Uruk and Borsippa; maybe they observed it in these cities.”

Having connections to an extensive network of colleagues, particularly if they were widely geographically dispersed, could help a scholar find favor with the king. For instance, when a Babylonian astrologer named Marduk-

šapik-zeri, who had fallen out of favor with Esarhaddon, tried to return to the king’s good graces, he cited not just his skill at observing good and bad portents in the sky, but also his connection to “twenty competent scholars worthy of royal desire.” These included a haruspex, or diviner, from Elam, in Iran, several exorcists from Assyria, and various other physicians and chanters.

Singleton points out that both Esarhaddon and Ashurbanipal had good reason to encourage communication among scholars throughout the empire. Both kings were younger sons who were elevated to the throne over older brothers, causing intense controversy

and strife during their respective reigns. Keeping tabs on omens discovered by a broad range of scholars was, therefore, highly advantageous. In Ashurbanipal’s case, he became king of Assyria while his older brother was named king of Babylon, a lesser yet competing position. “Ashurbanipal collected scholars almost the same way he collected tablets for his library,” says Singleton. “I wonder if his interest in making sure he was engaging with scholars in Babylonia as well as Assyria had to do with getting insider knowledge from his brother’s portion of the kingdom to make sure there weren’t any uprisings there.”

—DANIEL WEISS

OFF THE GRID GUNUNG KAWI, BALI

Some 1,000 years ago, stonemasons cut into a basalt escarpment in a river valley outside the modern Balinese village of Tampaksiring. They carved out a nearly 100-foot-wide courtyard backed by a 40-foot-tall vertical wall. Into this wall they carved five shrines, called *candis*, each almost 30 feet tall and intended to resemble temple facades. Across the small river bisecting the valley, the masons carved another courtyard and four more, slightly smaller, *candis*. A tenth *candi* is set apart from the others. The two courtyards and the *candis*, as well as a number of small artificial caves that may once have been used as prayer or living spaces for monks, make up the site of Gunung Kawi. This is one of many temple complexes built on Java and Bali starting around the first century A.D., when Hinduism and then Buddhism began to come to Indonesia from the Indian subcontinent.

The Gunung Kawi complex was likely built to memorialize the Balinese ruler Anak Wungsu, who died around A.D. 1077. The smaller *candis* are thought to commemorate Wungsu’s children, wives, and concubines. “Multiple queens or children get a monument that’s 95 percent the size of the monument to the king,” says archaeologist John Schoenfelder of the University of Massachusetts Boston, “so they are being categorized as nearly as important.” Schoenfelder suggests that this relative lack of hierarchy emphasizes the fact that the extended royal household was considered a single entity. At Gunung Kawi, the ruler and his kin were venerated alongside patron gods with whom they were reincorporated after death.

THE SITE

The entrance to Gunung Kawi is a short walk from the center of Tampaksiring and a half-hour taxi ride from the popular tourist town of Ubud. Beyond a gauntlet of souvenir stalls, a steep set of more than 300 stairs leads down into the valley. The price of admission includes the rental of a sarong and sash, which are customarily worn when visiting temples in Bali. Very little in the way

of interpretive display is available at the site, so you may wish to inquire with local tour agencies or at your hotel about hiring a guide.

WHILE YOU’RE THERE

Gunung Kawi, as well as nearby Tirta Empul, a water temple just half a mile north that has been visited for centuries by pilgrims seeking ritual purification, is nestled within an ancient landscape of rice terraces and irrigation canals. Between temple visits, sign up for a walking tour along one of the various pathways in the Ubud area to witness firsthand the



Candis, Gunung Kawi, Bali

inextricable connection—both physical and symbolic—between Balinese agriculture and religious life.

—MARLEY BROWN



BICYCLES AND BAYONETS



Stable door, Lincolnshire, England



WWI graffiti



Bicycle graffiti

Recently discovered graffiti carved into a stable door at a farm in Lincolnshire during the first decades of the twentieth century mixes bucolic childhood concerns with matters of far greater import. Looming above images of plows, horses, and a bicycle is a stark record of the day Great Britain entered World War I: “WAR AUG 4 1914.” Below this date sits a question mark. “I wonder if this is someone asking, ‘When’s it going to end?’” says Ian Marshman, historic environment officer at the Lincolnshire County Council. The graffiti artists also signed their work with two sets of initials—WB and JL—and an abbreviated name, J. Leusley.

Marshman and his colleagues used census information to determine that WB was William Bristow, part of the family that owned the farm, and JL was John Leusley, a son of the owner of a nearby pub, The Axe & Handsaw. It’s likely the initials and other images were carved into the door years before the beginning of the war, when Bristow would have been around 22 and Leusley around 29. Bristow appears to have remained on the farm during the war, while Leusley was injured in France and received a partial pension, suggesting he could still work, but not at his skilled prewar job as a steam engine driver.

—DANIEL WEISS

JOURNEY INTO THE HEART OF HISTORY

Since 1983, Far Horizons has been designing unique trips led by renowned PhD scholars for small groups of sophisticated travelers who desire a deeper knowledge of both past and living cultures.

WALES

June 1 – 15, 2020

IRELAND

June 12 – 27, 2020

SCOTLAND

July 10 – 24, 2020

GEORGIA & ARMENIA

August 7 – 24, 2020

ENGLAND

August 15 – 27, 2020

CENTRAL ASIA

September 18 – October 5, 2020

BULGARIA

October 4 – 21, 2020

EASTERN INDIA

January 2 – 17, 2021

INDIA'S GUJARAT & RAJASTHAN

January 9 – 26, 2021

SOUTH INDIA

January 25 – February 10, 2021

EASTER ISLAND

February 7 – 18, 2021

JORDAN

March 6 – 19, 2021

GREECE

May 20 – June 4, 2021

...AND MUCH MORE!

Russia • Bolivia • China • France
Egypt • Tunisia • Sri Lanka • Maya World
Italy • Sicily • Peru • Baltics • Iceland
Cyprus & Malta • Scandinavia
Indonesia • Sudan • Central Mexico
Iran • Morocco • Bhutan & Sikkim
Ethiopia • Cambodia & Laos • Turkey

Far Horizons
Archaeological & Cultural Trips, Inc.
1-800-552-4575
www.farhorizons.com

A BARREL OF BRONZE AGE MONKEYS

Scholars have long believed that a Bronze Age Aegean painting of a troop of monkeys depicts stylized exotic primates cavorting about a rocky landscape. The

fresco adorns a room in a two-story complex at the second-millennium B.C. settlement of Akrotiri on the Greek island of Thera. No monkeys are native to the region, and the depictions

were thought to have been made by painters following Egyptian stylistic conventions, which often rendered animal species as abstract types. Now, a team led by University of Pennsylvania archaeologist Marie Nicole Pareja that includes primatologists and a taxonomic illustrator has concluded that the Akrotiri monkeys are, in fact, accurate depictions of langur monkeys, whose natural range is the Indus River Valley, some 4,000 miles away.

The researchers observed that the Akrotiri monkeys have S- or C-shaped tails, just as langurs do. Pareja believes this key detail shows that the artists who created the fresco must have seen the primates with their own eyes. “We think they had direct contact with the langurs,” says Pareja. “Textual sources suggest Mesopotamians imported critters from the Indus Valley, so it’s possible the painters encountered the langurs there, or elsewhere in the Near East.”

—ERIC A. POWELL



Fresco, Akrotiri, Greece

DOMESTIC HARMONY

A fragmentary but poignant insight into the spare moments of nineteenth-century Wisconsin homesteaders has been discovered at Fort McCoy, a

United States Army installation about 90 miles northwest of Madison. Archaeologists unearthed four pieces of a German-made harmonica among more than 2,000 artifacts from what appears to have been a communal dumping ground in the area. One of the harmonica’s exterior plates reads “Friedr. Hotz,” indicating that it was made by the Friedrich

Hotz Company. Based in Knittlingen, Germany, the company began producing harmonicas in the 1820s and was eventually

bought out by Matthias Hohner, who introduced the instrument to America in 1862. “The leisure-related items from the site represent a small portion of the assemblage,” says Colorado State University archaeologist Tyler Olsen. “This probably reflects the proportion of any given day that could be devoted to recreation in some small way.”

—MARLEY BROWN



Harmonica

SHOCK OF THE OLD



Cave, Sulawesi, Indonesia

The world's oldest known cave art created by modern humans, discovered on the Indonesian island of Sulawesi and recently dated to at least 44,000 years ago, has transformed researchers' understanding of human artistic development. The illustrations feature a number of part-human, part-animal figures hunting wild pigs and dwarf buffaloes. The painting is, therefore, the earliest figurative artwork, the earliest pictorial narrative, and the earliest evidence that people conceived of supernatural beings, which is viewed as a necessary precursor to formulating religious systems of thought. "What is most surprising is that 44,000 years ago all the concepts of art were fully developed," says archaeologist Maxime Aubert of Griffith University. "They must have had a much earlier origin in Africa, or just after humans left Africa."

The researchers determined the minimum age of the painting by dating mineral deposits that have formed on top of it. These deposits contain trace amounts of uranium, which decays to thorium at a steady rate. Their age can be calculated from the ratio of the two elements. More than 200 cave art sites have been documented in this region of southern Sulawesi. The newly discovered work is some 65 feet above the cave floor, which helps explain why it escaped notice until recently.

—DANIEL WEISS



Hunting scene

Discover Newfoundland & Labrador

The rich and diverse human history of this place is unlike anywhere else in the world. This is where East met West, when two streams of humanity came face-to-face at L'Anse aux Meadows around AD 1000, at the only confirmed Norse site in the New World.

We invite you to trace the steps of 9000 years of Indigenous and European explorers and settlers as you drive across Newfoundland and into the south coast of Labrador.

CALL 1 800 567 6666

MAXXIM
vacations

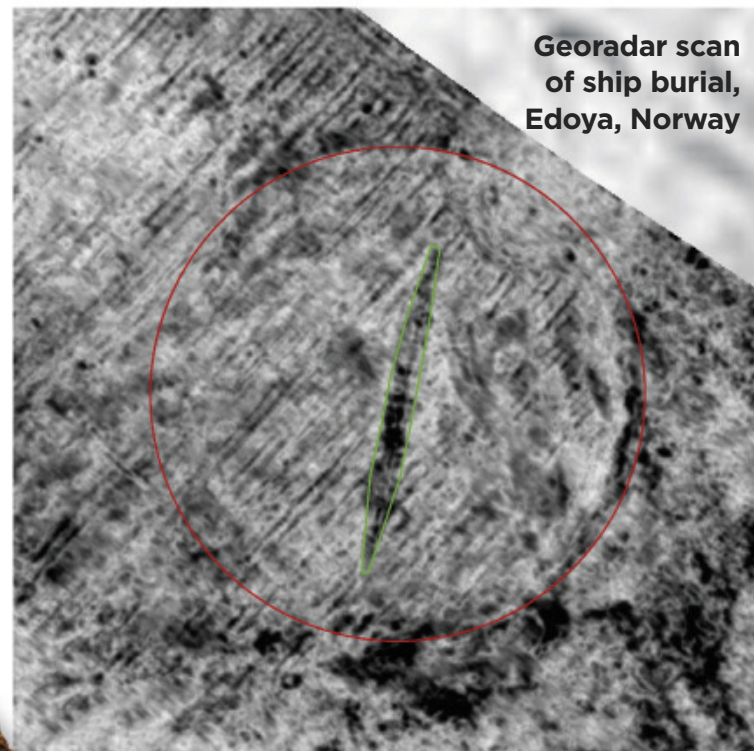
MAXXIMVACATIONS.COM

Photo: L'Anse aux Meadows © Newfoundland and Labrador Tourism

SAILING THE VIKING SEAS



Lower ship burial, Vinjeora, Norway



Georadar scan of ship burial, Edoya, Norway



Female burial, Vinjeora



Brooch, Vinjeora



Ship burial, Uppsala, Sweden

Elaborate ship burials are among the most famous and most mysterious remains of the Viking Age. During the burial ritual, an individual was laid to rest on the deck of a full-size ship, which was then interred beneath a mound of earth. Over the past century and a half, dozens of such ship burials have been discovered from Scandinavia to the British Isles. In recent months, five more have been identified in Norway and Sweden.

Specialists from the Norwegian Institute for Cultural Heritage Research detected one ship on the Norwegian island of Edoya using high-resolution georadar. The vessel, which lies just belowground, is between 40 and 50 feet long and awaits further archaeological investigation.

Around 25 miles east of Edoya, on Norway's mainland, archaeologists were perplexed by the discovery of not one, but two ship burials at a single site in Vinjeora. The first contained

a man who died in the eighth century A.D. and was buried in a 30-foot boat. Around 100 years later, a well-to-do woman was buried in her own, slightly smaller ship, directly on top of the earlier burial. Her grave contained several high-quality artifacts, including a cross-shaped brooch. "We were very surprised," says archaeologist Raymond Sauvage of the Norwegian University of Science and Technology. "I know of no other examples where they reopened an earlier grave to bury a new boat in the next century." Sauvage believes the two must have been related, perhaps as grandfather and granddaughter.

Across the border in Sweden, two additional Viking ship burials were recently unearthed outside the town of Uppsala. While one was found to have been badly damaged, the other was well-preserved. It contained a man who was sent to the afterlife with the companionship of a horse and a dog, both of which were also interred in the ship.

—JASON URBANUS

HearClear GO™ Rechargeable Digital Hearing Aid Technology Only \$199!*

(*Each when you buy a pair)

The new Advanced HearClear™ **Go rechargeable** hearing aid combines advanced technology with a low price to provide you with outstanding value.

5 Star Reviews! ★★★★★

Outstanding Product! "This product is outstanding. Dad loves it, my mom loves it, and I am grateful! Don't believe that you have to spend a lot of money to get a quality hearing aid"
- Gilmore B.



Go Features!

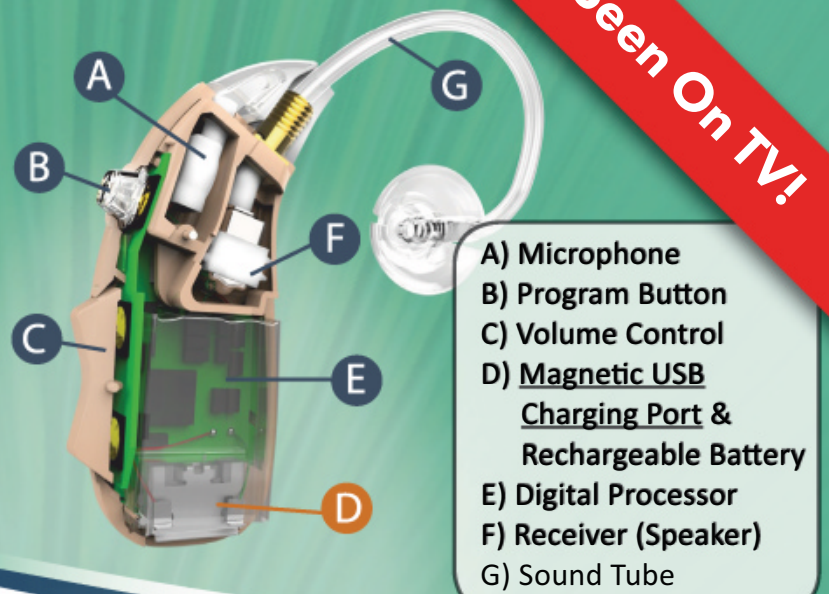
- ✓ Digital sound processing chip provides **crystal clear sound and makes speech easier to understand** with less feedback than old analog technology
- ✓ Don't worry about replacing batteries! **Full Charge Gives 16 Hours of Use! (Free Charging Base Included)**
- ✓ Automatic Noise Reduction and Feedback Canceled
- ✓ **100% Money Back Guarantee**

Even Better In Pairs!

Your brain is designed to use both ears working together. In fact, studies show that you may be able to **hear up to 3 times better** in noisy situations when using two hearing aids. Buy a pair for the best results and save \$80!



HearClear hearing aids have been clinically proven to show **significant improvement in speech understanding**.
(University of Memphis, 2018)



As Seen On TV!

**High Quality.
Easy.
Affordable.**

Rechargeable Digital Hearing Aid - For Only \$199!*

The new HearClear Go Rechargeable Digital Hearing Aids feature **advanced digital technology** at an unbelievably affordable price! The Go utilizes the key technologies of high-end digital hearing aids while leaving out fancy bells and whistles that increase cost and require expensive adjustments. With the Go, **you'll hear clearly while saving a lot of money!**

Your lightweight and discreet Go hearing aids work at a fraction of the cost of name-brand hearing aids, and they're amazingly convenient! With the Go's included charging station, you won't have to keep buying and replacing tiny hearing aid batteries, and the Go is pre-programmed for most mild to moderate hearing losses—no costly professional adjustments needed. **They're shipped directly to you and help you hear better right out of the box. Simply take them out, put them in, and Go!**

You can spend thousands on an expensive hearing aid or you can spend just \$239 for a hearing aid that's great for most mild to moderate hearing losses (**only \$199 each when you buy a pair – hear up to 3 times better than wearing just one**). We're so sure you'll love your hearing aids we offer a **100% Money Back Guarantee - Risk Free** if you are not satisfied for any reason.



MONEY SAVING OFFER!

Use Coupon Code: **AZ3**

1-877-704-3751

***Only \$199 Each When You Buy A Pair!**
(Coupon Code & Price Valid For A Limited Time Only)



Visit and Save: www.AdvancedHearing.com/AZ3



EXPLORE THE ANCIENT CITY OF TROY!

*Presenting the
Interactive Map of Troy*



All you need to tour 4,000 years of the archaeological history of Troy is a digital device. For centuries, the story of Troy has influenced cultures around the world. You can discover why just by clicking on the color-coded map. Learn about:

- The city's nine layers and each of their exciting stories
- The temples, gates, and other important buildings
- The people of both history and legend who defined Troy
- The amazing artifacts each era left behind
- The archaeologists who revealed Troy's mysteries

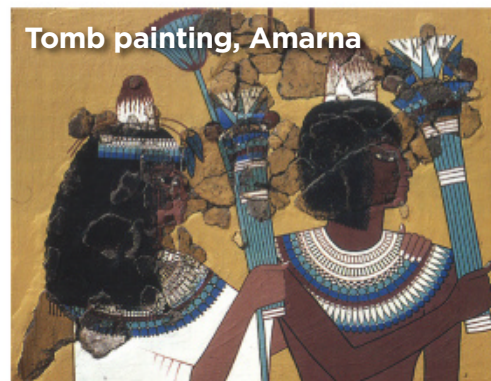
Start your adventure at archaeology.org/troy!

The AIA wishes to thank Richard C. MacDonald for his support of the Year of Troy project.

DIGS & DISCOVERIES

EGYPTIAN CONEHEADS

Egyptologists have long been puzzled by a type of figure in ancient Egyptian art depicted wearing an unusual kind of conical hat. These figures often appear in scenes depicting banquets, funerary rituals, or interactions with the gods. Scholars assumed that these strange headpieces were symbolic artistic devices, since no archaeological evidence of them had ever been uncovered. But new excavations of two burials dating to between 1347 and 1332 B.C. in Amarna have yielded proof that these headpieces did, in fact, exist. One hat was found atop the head of a female in her twenties, while the other belonged to a 15-to-20-year-old individual of undetermined sex. Analysis of the cones indicates that they were made of beeswax, perhaps molded around a textile lining. Experts are still unsure why some Egyptians wore the headpieces, or what they represent. “It’s probably wrong to think that there is one definitive answer as to the function and use of the cones,” says Monash University archaeologist Anna Stevens. “It seems that they placed the wearer in a special state, particularly a



Tomb painting, Amarna



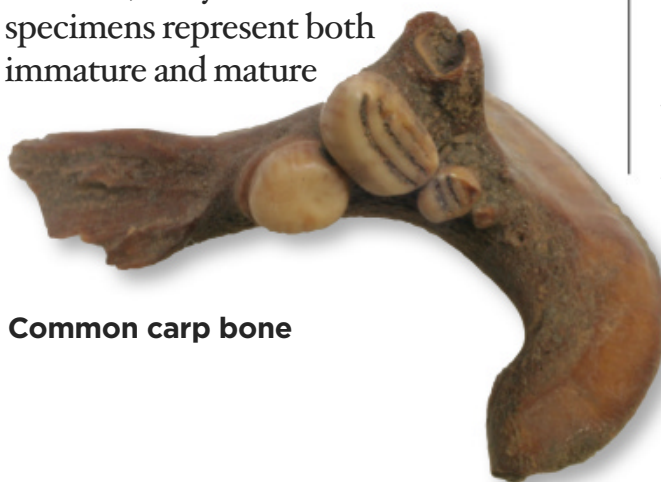
Burial, Amarna, Egypt

purified state, which was especially suitable when seeking out the company or assistance of divinities.”

—JASON URBANUS

CHINA'S CARP CATCHERS

Members of northern China's Peiligang culture practiced aquaculture well before the domestication of fish in medieval Europe. By measuring teeth from common carp remains excavated at the Neolithic site of Jiahu, an international team of researchers estimated the body sizes of the fish. Comparing them with carp populations reared in modern Japanese fisheries, they found that the ancient specimens represent both immature and mature



Common carp bone

fish. This suggests that, by about 8,000 years ago, Jiahu residents had begun to raise carp in controlled channels, where the fish spawned naturally and were harvested in the autumn.

A dramatic increase in burials identified at Jiahu around this time indicates that the settlement had grown, explains archaeologist Junzo Uchiyama of the Sainsbury Institute. “It’s possible to assume that carp aquaculture was developed in response to the increase of population,” he says. This innovative approach to food production might have also enabled the Peiligang to expand, as the number of sites associated with the culture increased after 8,300 years ago.

—BENJAMIN LEONARD

THE BEST TRAVEL INSURANCE WAS CREATED BY SCIENCE

Over 11 carats of worry-free elegance for just \$89

 DiamondAura®

BUY 2
GET 1
FREE

A.

To show
exquisite details,
bracelet shown is
not exact size.

According to NBC news.com there are five scientifically-proven benefits of travel: improves health, relieves stress, enhances creativity, boosts happiness and lowers the likelihood of depression. When traveling, don't risk these great benefits worrying about losing or breaking expensive jewelry or messing with the hassles and costs of insurance. You're supposed to be destressing right?

Sure you could wear a \$6,000 bracelet, and cry for days when it goes missing after a particularly festive mamba line at the resort swimming pool. Or, you could wear something equally as stunning that puts a lot less pressure on you to stay on your toes. The **Stress-Free Glamour Bracelet Collection** features dressed up sterling silver tennis bracelets that sparkle with all the beauty of emeralds, rubies and sapphires, but without the steep price.

The Ultimate Diamond Alternative™, DiamondAura® has all the fire, clarity and glamour of the world's best mined gemstones. In fact, because these stones are created in pristine conditions, you have the scientific advantage of achieving near perfection. An 11 carat emerald and diamond bracelet that looks this good would set you back over \$6,000. The **Stress-Free Glamour Bracelet** has a much more relaxing price of \$89.

So, whether you're celebrating on the road or in your home town, arm yourself with over eleven carats of worry-free elegance and live life to its fullest without emptying your wallet.

Satisfaction guaranteed or your money back. Enjoy the incomparable sparkle of the **Stress-Free Glamour Bracelet Collection** for 30 days. If you aren't perfectly happy, send it back for a full refund of the item price.

PRAISE FOR DIAMONDAURA®

"So much sparkle and the play of light on DiamondAura® beats any diamond!"

– D.D. from
Columbus, OH

Stress-Free Glamour Bracelet Collection

A. Emerald Green Bracelet (11 ¾ ctw) ~~\$399†~~ \$89 + S&P **Save \$310**

B. Ruby Red Bracelet (11 ¾ ctw) ~~\$399†~~ \$89 + S&P **Save \$310**

C. Sapphire Blue Bracelet (11 ¾ ctw) ~~\$399†~~ \$89 + S&P **Save \$310**

Set of All 3 Bracelets ~~\$1,197~~ \$178 + S&P Save \$1,019

You must use the insider offer code to get our special price.

1-800-333-2045

Your Insider Offer Code: **GBC197-03**

Please use this code when you order to receive your discount.



Rating of A+

• The Ultimate Diamond Alternative™, DiamondAura® • Rose gold-finished .925 sterling silver settings • 7 ½"; box clasp

† Special price only for customers using the offer code versus the price on Stauer.com without your offer code.

Stauer® 14101 Southcross Drive W., Ste 155, Dept. GBC197-03, Burnsville, Minnesota 55337 **www.stauer.com**

Stauer... Afford the Extraordinary.®

FIELD OF TOMBS

For thousands of years, in a field next to the site of the Palace of Nestor in Pylos in mainland Greece, tens of thousands of watermelon-sized stones protected two Bronze Age tombs dating to between 1600 and 1500 B.C., the very beginning of the Mycenaean era. After more than a year and a half of removing the stones—which were the remains of the tombs’ collapsed roofs—a team from the University of Cincinnati led by archaeologists Sharon Stocker and Jack Davis unearthed the two beehive-shaped, or tholos, tombs, which contained gold jewelry and multiple skeletons. A gold ring, which was found in the smaller of the two tombs, depicts a unique scene of bovines and barley. A gold pendant depicting the

Egyptian goddess Hathor was found in the larger tomb. “Such imported objects are exotica that were highly prized,” says Davis. For example, adds Stocker, “It’s not impossible that the people who included the pendant with the Pylos burials understood that in Egypt Hathor was a protectress of the dead. These things are not just bric-a-brac, but objects collected with an understanding of their meaning.”

In addition to the gold ring and pendant, the team also recovered thousands of flakes of gold foil. At this point, the researchers aren’t certain what the original purpose of the flakes may have been, but suggest it’s possible that certain bodies were covered with gold foil.

—JARRETT A. LOBELL



Gold ring



Gold Hathor pendant



Tholos tomb



Aerial view of tholos tombs, Pylos, Greece

BIRD ON A WIRE

A seventeenth-century silver hawking ring called a vervel has been uncovered in a field near the town of Harwich, on the southeast coast of England. An inscription on the vervel links the artifact to a man named Thomas Playters, a member of the gentry who bore the title Baronet of Sotterley. The ring would have been placed on a hunting raptor's leg, to attach the bird to a perch via a line. "Vervels are very helpful items when it comes to tracing individuals through history, especially when they are inscribed," says Sophie Flynn, finds liaison officer for the Portable Antiqui-



Goshawk

Silver vervel

ties Scheme at Colchester and Ipswich Museums. She notes that while most vervels discovered in Britain are made of silver, those crafted from copper and bronze do turn up as well. Finding more examples made from cheaper materials may help determine to what extent hawking was—or was not—the exclusive preserve of the upper classes.

—MARLEY BROWN



EXPLORING SICILY



EXPLORING IRELAND



EXPERT-LED ARCHAEOLOGICAL & CULTURAL TOURS & GULET CRUISES



PETER SOMMER
TRAVELS

WWW.PETERSOMMER.COM

Tel: +44 1600 888 220

Toll free (US/Canada) 855 443 3027



CROW CANYON
ARCHAEOLOGICAL CENTER

**Join Us
for a Unique
ADVENTURE**

Cultural Explorations Travel Seminars
Experience the beauty of the American West
and beyond on a trip guided by archaeologists,
scholars, and cultural experts!

Adult, Student, and Youth Programs
Archaeology Lab Programs – College Field School
Teen Camps – Archaeology Research Programs

Registration is open for all 2020 programs!
Learn more at crowcanyon.org

crowcanyon.org | Cortez, Colorado | 800.422.8975

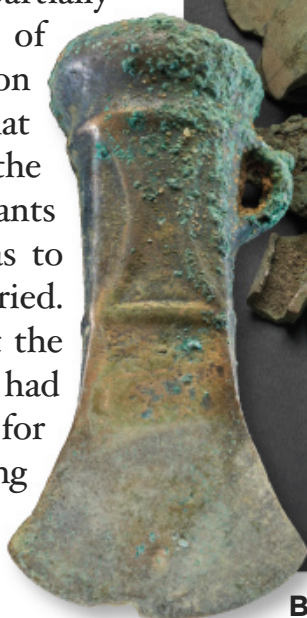
CST 2019347-50

TOOL TIME

An extraordinary collection of bronze tools and weapons was recovered at a construction site near the Thames in East London. Dubbed the Havering Hoard, the assemblage comprises 453 artifacts dated to between 900 and 800 B.C., making it the largest Bronze Age hoard discovered in London. The artifacts, including axes, spearheads, swords, and woodworking tools, were found buried close together in four separate pits within an ancient enclosure. Most were partially broken or damaged in antiquity. Some of the axes are of a style that originated on the European continent, suggesting that the tools were either traded across the English Channel or brought by immigrants to Britain. Researchers are stumped as to why these artifacts were so carefully buried. One theory is that they may represent the stockpile of a local metallurgist, who had set aside the broken bronze objects for safekeeping with the intention of recycling them into new objects.

—JASON URBANUS

Havering Hoard, East London, England

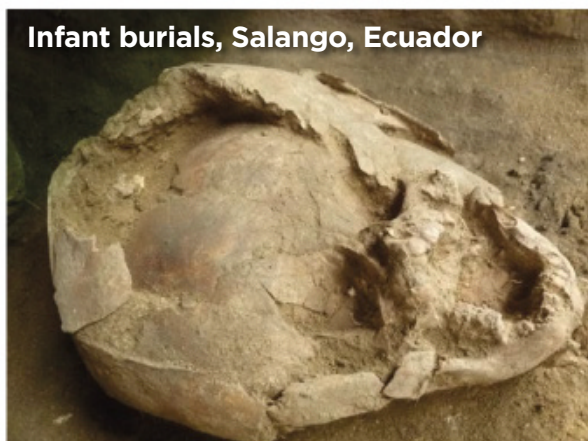


Bronze ax

PROTECTING THE YOUNG

The remains of infants buried wearing the craniums of older children as helmets have been excavated at the site of a ritual and funerary complex belonging to the pre-Columbian Guangala culture of coastal Ecuador. The burials are believed to date to around the first century B.C. According to University of North Carolina at Charlotte archaeologist Sara Juengst, natural disasters in the ancient Andean world often prompted dramatic reactions, including the sacrifice of children. In this case, the infants may have been sacrificed in an attempt to end environmental degradation and drought resulting from a possible volcanic event attested to by ash discovered at the site. However,

Infant burials, Salango, Ecuador



archaeologists also found lesions on the infants' skeletons, suggesting they were in chronic poor health. "They may have died of illness," Juengst says, "but I wondered about the children who provided the additional craniums." She suggests that these older children may have undergone a ceremony to induct them into full personhood in Guangala culture before their death, while the infants had not. Juengst believes that the skulls of deceased older relatives may have been exhumed and placed on the heads of the infants to provide spiritual protection against whatever fate was believed to befall those who died before reaching this milestone.

—MARLEY BROWN

EARLY ADOPTERS

The remains of a Christian basilica dating to the fourth century A.D. have been discovered at the site of Beta Samati, which may once have been an important religious and commercial center of the Aksum Empire in northern Ethiopia. The Aksumites, who embraced Christianity around A.D. 325, were important Red Sea trading partners with the Byzantine Empire until the Aksum Empire collapsed in the ninth century. Archaeologists discovered a number of artifacts, including stamp seals, coins, possible trading tokens, incense burners, and a stone pendant in the shape of a cross, that suggest the site was used for both administrative and religious purposes. “The basilica seems to have arrived in Ethiopia as a Christian architectural form,” says archaeologist Michael Harrower of Johns Hopkins University, “but it may also have retained some associations with bureaucratic functions that it had in Rome.” Bovine figurines and a gold and carnelian ring engraved with a bull’s head were also uncovered at the site, suggesting that indigenous pagan beliefs survived alongside Christianity. “People are worshipping multiple gods and switching back and forth,” Harrower says. “There appears to have been a lot of flux here in terms of religious tradition.”

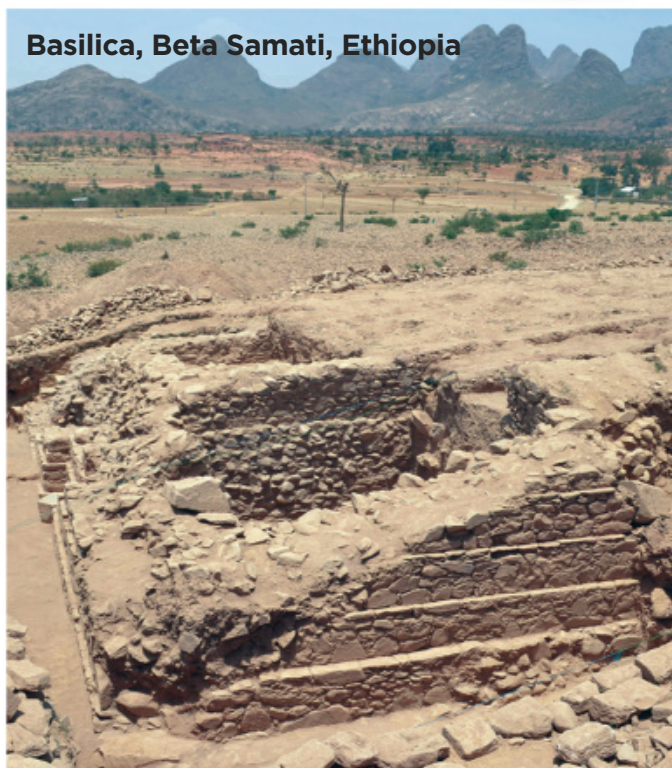
—MARLEY BROWN



Gold and carnelian ring



Stone pendant



Basilica, Beta Samati, Ethiopia



7th-century Aksumite coin (obverse and reverse)

WE SPEAK THE CLASSICS FLUENTLY.



Our award-winning archaeological tours bring the past to life. This is down to expert lecturers, chosen for their skill in painting vivid pictures of antique worlds. From Pompeii to Petra our meticulously planned itineraries celebrate the genius of ancient civilisations.

Contact us:
1-800-988-6168
martinrandall.com

ATOL 3622 | ABTA Y6050 | AITO 5085



MARTIN
RANDALL
TRAVEL

LEADING EXPERTS IN CULTURAL TOURS



ARCTIC: When the ancestors of today's Inuit population crossed into North America from Siberia 2,000 years ago, they had a secret weapon that would help them conquer the

notoriously harsh Arctic climate: their dogs. Although dogs were already present in North America, according to a recent study of hundreds of dog and wolf remains, the first Inuit migrants brought their own specialized breed of sled dog with them. These dogs were genetically distinct from and larger and stronger than North American canine populations of the time.

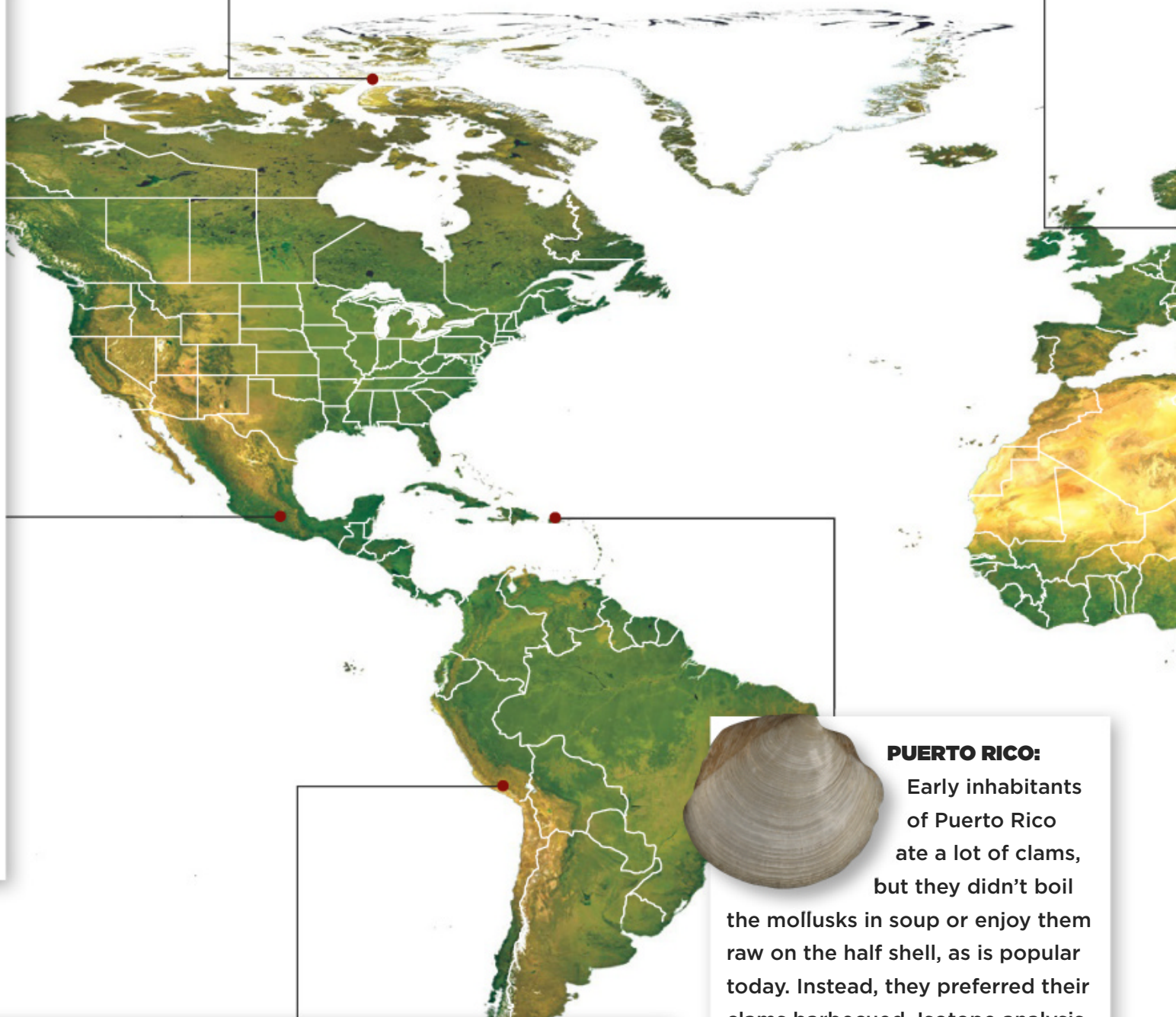


DENMARK: DNA embedded in ancient "chewing gum" from the island of Lolland was used to reconstruct the genome of a woman who briefly chomped on it 5,700 years ago.

Scientists were able to use the masticated piece of birch pitch to determine aspects of the woman's appearance, diet, and health. Her dark skin and hair and blue eyes indicate that she was more closely related to populations in mainland Europe than to Scandinavians of her time.



MEXICO: Huge pits dug in Tultepec, north of Mexico City, are providing greater understanding of the techniques humans used to hunt woolly mammoths 15,000 years ago. The two pits, each around 80 feet in diameter and 6 feet deep, contained 824 mammoth bones from 14 different animals. Researchers believe the pits were dug to trap confused mammoths, who were driven into them by hunters wielding torches and branches. The incapacitated beasts could then be more easily killed and butchered.



PERU: The number of known Nazca Lines continues to grow, thanks, in part, to artificial intelligence (AI). The mysterious, massive geoglyphs, representing humans, animals, and geometric shapes, were created in the Nazca Desert around 2,000 years ago. Recently, 142 new figures were detected with high-resolution 3-D imaging. AI software was also fed satellite imagery and data to test whether it could locate any more unknown images. The software was able to identify at least one previously unknown figure—a human-like form.



PUERTO RICO:

Early inhabitants of Puerto Rico ate a lot of clams, but they didn't boil the mollusks in soup or enjoy them raw on the half shell, as is popular today. Instead, they preferred their clams barbecued. Isotope analysis of 2,700-year-old fossilized shells from a pre-Arawak site in Cabo Rojo determined that the shells had been heated up to nearly 400°F, far above the boiling point. This suggests the bivalves had been roasted on a hot surface over a roaring fire.

WHAT IS AVAXHOME?

AVAXHOME-

the biggest Internet portal,
providing you various content:
brand new books, trending movies,
fresh magazines, hot games,
recent software, latest music releases.

Unlimited satisfaction one low price

Cheap constant access to piping hot media

Protect your downloadings from Big brother

Safer, than torrent-trackers

18 years of seamless operation and our users' satisfaction

All languages

Brand new content

One site



AVXLIVE ICU

AvaxHome - Your End Place

We have everything for all of your needs. Just open <https://avxlive.icu>



TURKEY: Humans have been wearing animal teeth as personal adornments for millennia. Some 8,500 years ago, people in the village of Catalhoyuk began fashioning pendants from parts of their deceased human brethren. Two human teeth recently found at the site had been carefully drilled so that they could be worn on a string. This is the oldest known evidence of this practice in the Near East. Wearing the teeth was likely not an everyday habit, but instead may have had special symbolic and ritual significance.



RUSSIA: A tiny, 1.6-inch-long sculpted cave lion found in western Siberia's Denisova Cave is believed to be one of the world's oldest carved animal figurines. Made from a woolly mammoth tusk, the partially intact carving was originally painted with red ochre and further decorated with a series of incised lines. Experts believe the figurine dates to between 45,000 and 40,000 years ago, but they do not yet know whether it was made by early *Homo sapiens* or by an extinct human species.



CHINA: Around 200 new terracotta warriors have joined the ranks of the 2,000 that had been previously excavated. The life-size sculptures were unearthed during the latest round of excavations at the 3rd-century B.C. tomb of Qin Shihuangdi in Xi'an. The recently uncovered figures represent two different types of soldiers, those who held long poles as weapons and those who carried bows. It is estimated that around 8,000 clay warriors were buried around the mausoleum to protect China's first emperor in the afterlife.



GREECE: An ancient merchant must have suffered a severe financial setback 2,000 years ago when his ship laden with commodities such as wine and olive oil sank off the island of Kefalonia. The wreck of the 110-foot Roman ship and its freight, which lie 200 feet below the sea's surface, were detected using side-scan sonar. When it went down, the ship was carrying an estimated 6,000 amphoras. It is the largest shipwreck ever discovered in the eastern Mediterranean.



INDONESIA: *Homo erectus*, believed to have been a direct ancestor of modern humans, walked out of Africa almost 2 million years ago and spread across Asia before beginning to disappear around 400,000 years ago. New research has shown that the last place the hominins survived was on the island of Java. A team used new technology on previously excavated remains to confirm that 12 *H. erectus* skulls from Ngandong were between 117,000 and 108,000 years old, making them the last known members of their species.

INSIDE A MEDIEVAL

A tiny Irish island holds the secrets of an unknown royal way of life

by JARRETT A. LOBELL



A fanciful 19th-century retreat sits on an island known as the Rock in Lough Key, in County Roscommon. Beneath the building lie the remains of a castle belonging to the MacDermots, one of medieval Ireland's most powerful families.

Gaelic Castle





FROM THE TWELFTH TO the seventeenth century, the MacDermots ruled the kingdom of Maigh Luirg in the Irish province of Connacht from a small island in Loch Cé (now Lough Key) known as the Rock. They were the right-hand men—and sometime rivals—of the O’Conors, the kings of Connacht, whose power center lay at the modern village of Tulsk, some 20 miles away. It was Diarmait, king of Maigh Luirg from 1124 until his death on the Rock in 1159, who gave the MacDermot clan its name.

In the sixteenth century, the king Brian MacDermot commissioned the *Annals of Loch Cé*, which remain among the most important written records of medieval Irish history. They are the primary source for the history of the kingdom of Maigh Luirg (Anglicized as Moylurg), which occupied roughly the same territory as the northern section of the modern county of Roscommon. The *Annals*, which survive in only two manuscripts written primarily in Early Modern Irish, with some sections in Latin, were compiled using earlier Irish annals as sources. They record more than five centuries of political, ecclesiastical, and military events, succession and land disputes, and even notes on the weather. They begin with the Battle of Clontarf in 1014, a contest that pitted Brian Boru, the high king of Ireland, against a coalition composed of the king of Dublin, Sigtrygg Silkbeard; the king of Leinster, Máel Mórda; and a force of Vikings from across the region. The *Annals* end in 1590, when most of the Gaelic families in Ireland, including the MacDermots, were thrown off their lands by the Anglo-Normans—the ruling class of England after the Norman Conquest in 1066—who had invaded Ireland centuries earlier, in 1169.

Surprisingly, there are relatively few references to the Rock of Loch Cé itself in the *Annals*, or in other contemporaneous historical works. In 1187 (or 1184, scholars are not certain), the *Annals* record that lightning struck the island, causing a fire. In 1207, the king Tomal-

tach MacDermot died on the Rock. A further reference is made to a siege of the island in 1235 by an Anglo-Norman force. During the attack, the invaders used siege engines called perriers and fireboats made from demolished wooden houses. The siege forced the MacDermots to abandon the island for a decade. Then, over the next three and a half centuries, the *Annals* record periodic attacks on the Rock, countless clashes over succession, and the deaths of numerous MacDermot kings. But with only one exception—the mention of a “great, regal house” that was built on the Rock in 1578 by Brian MacDermot—nowhere are the buildings of a royal residence ever described.

The sand-colored stone walls, turrets, and empty windows that can be seen on the Rock today, though picturesque, are not the remains of a MacDermot stronghold, but a product of the imagination of John Nash, the nineteenth-century Welsh architect of Buckingham Palace. In the seventeenth century, an Anglo-Irish noble family named the Kings took possession of the Rock. More than a century later, Robert Edward King commissioned Nash to build the Gothic-style folly, the ruins of which are now visible on the Rock and on guidebook covers, restaurant walls, and travel posters. But it is the MacDermots’ much earlier castle—hidden, perhaps, by crumbling walls, creeping vegetation, and feet of mud—that archaeologist Thomas Finan of Saint Louis University has now set out to find.

Finan and his team are searching not just for the remains of walls, but for an entire way of life. Scholars know very little about how the Gaelic kings lived, and what they do know derives primarily from Irish annals and other historical sources, many of which carry the bias of the Anglo-Norman rulers



The foundations of high medieval (A.D. 1000–1200) buildings that were once home to the MacDermots are the first excavated evidence of the family’s castle.



A drone image shows the early stages of excavation of the high (A.D. 1000–1200) and late (A.D. 1200–1450) medieval structures on the Rock.

hailing from the opposite side of the Shannon River, which splits the west of Ireland from the east. So little is understood about the kings of Maigh Luirg—and other royal families, including the O’Conors, O’Flahertys, and O’Reillys—largely because Irish archaeology has been dominated by the study of Neolithic, Iron Age, and early Christian Ireland, as well as Anglo-Norman castles, which, unlike Gaelic sites, are easily identifiable in the landscape. And, over the past three decades, urban archaeology tied to construction projects has skewed the evidence in favor of medieval city dwellers who were not, it seems, the lords of the country.

Furthermore, unlike the Anglo-Normans, the Gaelic kings did not keep detailed estate inventories and accounts. Coupled with the absence of archaeological evidence to the contrary, this has tempted many scholars of medieval western Ireland to agree with the twelfth-century historian Giraldus Cambrensis, who argued that the Gaelic kings did not build castles. Whether Giraldus’ words were a poorly disguised attempt to portray the Irish as uncivilized in contrast to his Anglo-Norman patrons, or an accurate appraisal is debatable. “Giraldus wrote that the Irish were all living in timber huts and went into battle with little or no armor,” says Finan. “‘They don’t build castles, they don’t do this, they don’t do that’—and this narrative was accepted until things started to change a few decades ago.” In fact, explains Finan, no high medieval power center, or *caput*, from the Latin for “head,” of which there are many in the west of Ireland, has ever been fully excavated. At Lough Key, Finan and his team are just starting to create a picture of what a residence for a family as high status as the MacDermots—their castle—might have looked like. “We aren’t rewriting history here, we are writing it,” says Finan. “We can now start to link the archaeology to these historical sources. It’s really starting to happen. This site is like a text to me, and the archaeology is creating the narrative.”

IN 2007, ARCHAEOLOGIST Niall Brady of the Archaeological Diving Company undertook the first underwater archaeological survey of the waters around the Rock. He wanted to find out whether the island is a natural one or an artificial crannog, as well as what types of archaeological material lay on the lakebed. Brady’s team found that the western half of the island was naturally formed of rocks and large boulders. He had expected to identify timber pilings or other indications that, like its eastern half, the entire island was artificially constructed. “In this way the site is unusual in Ireland because, unlike most lake islands, it isn’t a crannog per se,” says Brady. The team also recorded a great deal of animal bone, some of it butchered, along with more recent champagne bottles and other debris that can, says Brady, be assigned to the feasts of nineteenth-century—not medieval—lords.

At the same time, Finan, Brady, and Kieran O’Conor of National University of Ireland Galway surveyed the remains on the island, which had just

been privately acquired and cleared of vegetation, making the ruins more visible than they had been in a century. O’Conor concluded that there was evidence for a tower house, which was recognizable by the presence of windows and arrow slots, two well-known features of such structures. Tower houses, common at later medieval lordly sites, were multistory fortified residences built at a time when the ruling classes of Ireland both west and east lived in fear of what they perceived as generalized lawlessness and danger posed by their subjects. Although it is known that these secure structures were built in locations where Gaelic lords already had settlements, “people were surprised about the Lough Key tower house,” says archaeologist James Schryver of the University of Minnesota Morris, who is part of Finan’s team. “They didn’t expect it to be there.”

Finan thought that the tower house had been built in the Late Middle Ages (A.D. 1200–1450) and wasn’t able to identify any earlier structures on the Rock. It seemed that, despite the centuries-long prominence of the MacDermots, they had had no castle at their lordly residence, or even a large building, until the construction of the tower house. Perhaps the island had only been lightly defended with timber fortifications or a simple stone wall in the High Middle Ages (A.D. 1000–1200). Perhaps all the high medieval castles in Ireland were built in the east and the south by the Anglo-Normans. Perhaps Giraldus Cambrensis had been correct all along. But Finan had his doubts. “You could explain the absences either by saying Giraldus Cambrensis was right or, more interestingly, by saying maybe he was right in one sense, in that the Gaelic lords didn’t live in traditional European castles, but that that doesn’t mean they didn’t build well-fortified stone structures and have their own architectural language. He didn’t actually see what they were living in, and didn’t pick up on the fact that their language of power and authority was different.”

It is clear, for example, judging from the copious stone

THE CASTLE OF HEROES



Rock of Lough Key, County Roscommon

The modern poet W.B. Yeats (1865–1939) was one in a line of centuries of Irish bards who, like the personal poets of the MacDermot kings, wrote about the Rock of Loch Cé. Yeats called the Rock the “Castle of Heroes” and envisioned it becoming a utopian community that would function as a kind of living shrine to the Irish past and a place to practice what he termed “a ritual system of evocation and meditation to reunite the perception of the spirit of the divine, with natural beauty.” In his description of this ritual system, Yeats combined his worship of the mystical might of Ireland’s past and his belief in the occult with his political agenda—in particular, Irish nationalism and an ardent desire to drive the English from the country.

Medieval Irish poets, too, had functions and powers beyond pure entertainment and delved into both religion and politics. “The medieval Irish bards were the tabloid reporters of their day,” says National University of Ireland Galway archaeologist Daniel Curley. In addition to reciting traditional songs, poems, and myths, medieval Irish bards were kingmakers—and breakers. “There were praise poems and satirical poems,” explains James Schryver of the University of Minnesota Morris, “and your greatest fear as a king is that your poet will satirize you and make it clear that you are no longer fit to be king.” Incidentally, adds Schryver, a poet could also raise blisters on the king’s face through his recitations. In the Middle Ages, as for Yeats, there was political power—and magic—in the words of poets. —JAL

monasteries and churches that were constructed at the time, that the Gaelic lords were more than competent builders. “One of the key features of Irish lordship and one of the ways you achieved legitimacy was by building on the landscape,” says Finan. Exactly what the medieval Gaelic kings were building is an open question. In Anglo-Norman Ireland, and across medieval France, Germany, and the Holy Land, kings, lords, and Crusaders constructed the type of large, walled, often moated fortified stone buildings that immediately come to mind with the mention of a castle. “Those types of castles are intimately tied to and are a function of the social structure of those places, which is to say, feudalism,” says Finan. In medieval Europe, the feudal system governed the relationships between the king and nobility, and between the nobility and peasants with respect to land tenancy, serfdom, and the exchange of lands for military service, all of which were centered on the castle.

However, explains Finan, feudalism was not the dominant social system in western Ireland, including Connacht, which remained in Gaelic hands. Instead, there were multiple kings at one time and professional classes of historians, clerics, lawyers, and poets, along with the peasants who worked the land. “If you are looking at the whole landscape of high medieval Ireland, it includes these dynastic professions, one of which

was a learned class of historians who composed works like the *Annals of Loch Cé*,” says Finan. One such family of historians, the O’Malconnors, was set up in a settlement south of the Rock and became part of the MacDermots’ retinue. “I thought, what is an Irish castle, if one were to be found?” says Finan. “Does it look enough like a European castle to call it a castle, but reflect an entirely different social structure that is native and local?”

WITH THIS IN MIND, Finan returned to Lough Key in 2018. “We have this high-status site that’s very visible, but actually not all that well known,” says Finan. “It’s mentioned in the *Annals* and it’s surrounded by three important monasteries located on other islands in the lake, by agricultural fields, and a church—all the hallmarks of the Middle Ages—but where was everyone, including the kings, living?”

The first step was a geophysical survey of the island’s western side that detected the presence of buried structures, including a possible floor surface or entranceway. The following year Finan began to excavate. He was concerned that the builders of the nineteenth-century folly had scraped the island clean and thrown everything—much of which Brady had seen in his underwater survey—over the side before

leveling it out for the new construction. “We anticipated having to dig through mounds of nineteenth-century construction fill and stone,” says Finan. But the fill wasn’t nearly as deep as he expected, and what the folly builders had actually scraped off were the remains from the seventeenth and eighteenth centuries, no evidence of which was found apart from a single pipestem. “Six inches from the surface, and we were in the Middle Ages,” says Finan.

In their first excavation season, Finan’s team uncovered evidence of what he believes was the MacDermots’ castle. This includes two possibly high medieval structures, one with a clay floor, and, underneath the buildings, what may be the entranceway that was part of an earlier fortification suggested by the geophysical survey. The archaeologists have also found that the stone wall surrounding the island appears to have had three or even four phases, the earliest of which predates the structures. Taken together, their finds are beginning to suggest the presence of a large stone fort with a 10-foot-wide wall that may have had a much higher timber superstructure. This wooden feature may have accounted for one of the numerous fires recorded in the *Annals*, evidence



Foundations and walls have been revealed by excavations at Tulsk, the royal seat of the O’Conors, the kings of Connacht and allies and rivals of the MacDermots.

of which Finan’s team has identified in the ground, in the form of bits of burned wood. As surprising as the identification of the Rock’s tower house may have been, the discovery of signs of a castle has been much more so. It seems the MacDermots may indeed have built, lived in, and defended an Irish castle. “It changes everything,” says archaeologist Daniel Curley of the National University of Ireland Galway. “Gaelic archaeology needs a reset button because there are still so many basic questions about culture, lifestyle, and economics. To have excavated a lordly site is massive.”

IN ADDITION TO MONASTERIES, castles, and agriculture, other integral elements of medieval European life included feasting, hunting, games, and poetry and genealogy recitations. (See “The Castle of Heroes,” page 28.) Late sixteenth-century woodcuts by the English artist John Derricke show scenes of Gaelic life that include Irish lords feasting, although they are depicted doing so outdoors, not in a hall or castle. Like Giraldus Cambrensis, however, Derricke likely sought to promote a negative vision of Gaelic lordship. Feasts are mentioned in such sources as the medieval national epic, the *Cattle Raid of Cooley* (see “Medieval Cattle Raiders,” page 30), and in this and other myths a good leader is measured by his generosity, including sharing the best cuts of meat. “This isn’t a world for introverts,” says Schryver. “Kings have social duties, including hosting feasts, and you aren’t going to make it if you don’t.” Until the recent excavations on the Rock, very little archaeological evidence of feasting had been found at any Gaelic lordly settlement. Now, however, Finan’s team has uncovered a vast amount of pig and cow bone, including many joints providing evidence that the kings saved the choicest cuts for their feasts. In the medieval period, as it does today, the mostly rural county of Roscommon had some of the most fertile land in Ireland, and the wealth of the Irish kings, much as the wealth of the modern county, lay in cattle. The kings used cattle as a



A recently excavated early medieval (A.D. 500–1000) wall may be evidence of the earliest medieval structure on the Rock.

food source and for raw materials, of course, but the animals' importance transcended the utilitarian. "Cattle are the coin of the day, the means to buy high-value and high-status gold objects," says Schryver. "They are also the way status is measured and conferred." Farmers were ranked according to how many head of cattle they owned, and categories of wealth were established using, for example, the value of a female slave or of so many head of cattle, which varied depending on whether the animals were cows or more valuable bulls.

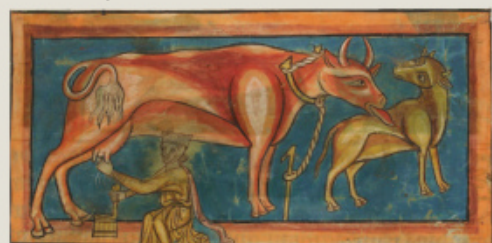
Along with the pig and cow bones, Finan's team has found a tusk from a



A woodcut from the 1581 book *The Image of Ireland* by John Derricke shows Irish lords feasting and being entertained by a bard and harpist.

MEDIEVAL CATTLE RAIDERS

It was not enough for medieval Irish lords to own cows, they also had to steal them. "Stealing cows was important in this society," says archaeologist Daniel Curley of the National University of Ireland Galway. "It was a ready source of wealth, a slight to opponents' honor and power, and a pseudo-martial sport." In fact, pilfering the animals is the central theme of Ireland's national epic, the *Cattle Raid of Cooley*, which was composed in the seventh and eighth centuries. It tells the tale of a conflict between



Cattle, 14th-century Irish manuscript

the kings of Connacht and the kings of Ulster over the Brown Bull of Cooley, which was owned by Daire, an Ulster chieftain.

Medb, the warrior queen of Connacht, and her husband, the king Ailill, were very competitive about their assets, explains University of Minnesota Morris

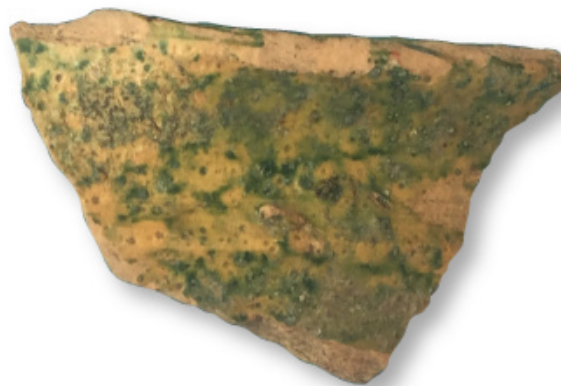
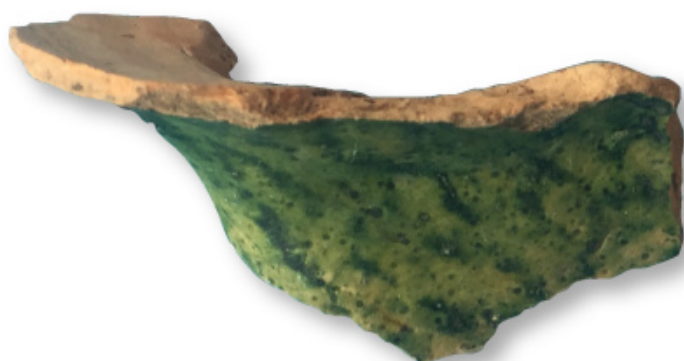
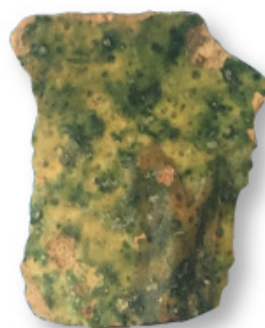
archaeologist James Schryver. "Much of their pillow talk involves arguing about their possessions, including which of them has the best bull." Ownership of an impressive white-horned creature named Finn timer wins Ailill the argument. Determined to be richer than her husband, Medb plans to steal the famous brown bull from Daire and leads her army from Connacht to seize the animal. To settle the score, the teenage hero of Ulster, Cuchulainn, meets Medb's greatest warrior—and Cuchulainn's closest friend—Ferdiaid, in combat. After four days, Cuchulainn wins the contest, defeats Medb's army, and captures the brown bull. In the end, the brown bull vanquishes Finn timer—after which its heart bursts and it dies—and peace is finally declared. —JAL

very large boar that was likely hunted on MacDermot lands and then taken to the Rock to be butchered and eaten. The team has also identified fish bones, more evidence of what the MacDermots were eating. "Now we will be able to say something about the dietary habits of the high-class Irish lords, which is something we have never been able to do before," says Finan.

Another lacuna in the archaeological evidence of high-status medieval Ireland has been objects of daily life, or even of special events. "It's amazing how few artifacts there are at most sites," says Finan. "This has played into the narrative that there is nothing to find—but maybe we haven't been looking in the right places." Chief among these absences has been pottery, the mainstay of archaeological artifacts. "It's very strange that after the Bronze Age there is so little pottery until the very late medieval period," says Curley. "We know they are using it, or think they are, but where is it?" At Lough Key, however, Finan's team has discovered thirteenth-century green-glazed pottery, a type rarely if ever found at a medieval Irish site, that was used for drinking wine. The pottery was discovered sealed in clay under a burn layer dating to 1320, when the O'Conors set fire to the island during one of their regular clashes with the MacDermots. The vessels, along with the wine, may have been imported through the English city of Bristol. "Having this kind of pottery and drinking imported wine is evidence of the MacDermots' adopting a status symbol well-known in the Anglo-Norman world," says Schryver. "This isn't out of the Irish milieu, but maybe they did it for particular guests to whom owning such items would have been impressive. At the most basic level, it's also evidence that the kings were able to access trade networks that we weren't aware they were part of." In contrast, a silver pin found by the team is traditionally Irish, as are several other artifacts, including a bronze pin, a gaming piece, and a bone comb. Clearly the Irish kings sought to balance fidelity to their own culture and identity with a desire for imported



Artifacts found on the Rock include (clockwise from left) a tusk from a boar that was likely eaten during a feast, typically Irish iron and silver pins, 13th-century green-glazed pottery, and an Anglo-Norman silver penny.



objects and traditions that may have been both politically and financially advantageous.

The MacDermots' contact with the world outside Connacht was also brought into focus by the discovery of a late thirteenth- or early fourteenth-century English silver penny that, says Schryver, challenges the entire story of how the Gaelic kings interacted with the Anglo-Normans in Ireland. "If you follow the dominant discourse about Gaelic Ireland up until the last decade—and even to the present in some fields—the idea is that the Gaelic kings weren't interacting with the Anglo-Normans at all, that they were separate, and also at war with them, so they shouldn't be using their money." But the penny, combined with a similarly dated one found on MacDermot lands nearby, and others found at the ecclesiastical complex of Kiltasheen just eight miles away, make it clear that these English coins had made their way into the landscape. "Every trowel scrape reveals something we didn't know," says Schryver, "or makes us question something we thought we knew."

The MacDermots, like all the other medieval Irish lords who were their sometime allies and sometime enemies, found themselves in a precarious position. On one side, just across the Shannon, were the Anglo-Normans, who made regular incursions into Gaelic territory. Closer to home were the O'Conors, O'Kellys, O'Dowds, and other families, all vying with each other for control. To fortify their claim to power, the MacDermots needed a castle, one that reflected their own social structure and values. "They could probably see that everyone else was building castles," says Schryver, "and, because they were quite quick on the uptake, they understood not only the practical but also the symbolic value of having a castle." Finan is now confident that he has uncovered evidence of just such a fortified medieval castle on the Rock of Loch Cé. "The Gaelic kings don't give up their secrets easily," says Finan. "We have to go and find them." ■

Jarrett A. Lobell is editor in chief of *ARCHAEOLOGY*.

LORD OF THE OASIS



In Egypt's Western Desert, worship of the mysterious god Seth thrived long after it waned elsewhere

By BENJAMIN LEONARD

Bordered to the north by a high limestone escarpment, the Dakhleh Oasis in Egypt's Western Desert was home to a cult center dedicated to the god Seth. Objects found within the temple complex at the ancient city of Mut, located in the oasis, include figures of Seth in two of his animal guises: a copper alloy "Seth animal" figure (above left) and (above right) a miniature carved carnelian hippopotamus.



THE GOD SETH IS ONE of the most enigmatic deities in the Egyptian pantheon. He was regarded as a god of confusion and disorder, and was often depicted in the form of one of many animals, including a hippopotamus, a falcon, and, most frequently, the “Seth animal,” a long-snouted creature with a forked tail and pert ears. The deity embodied both positive and negative aspects, but even his violent and destructive tendencies could be used for the good of the cosmos. Seth’s dual nature appears in the earliest texts containing myths about the Egyptian gods, the Pyramid Texts, which covered the walls of funeral chambers built for Old Kingdom pharaohs and queens at the necropolis

of Saqqara in the late third millennium B.C. In a later collection of spells called the Coffin Texts, which date to the Middle Kingdom (ca. 2030–1640 B.C.), Seth spears Apep, the serpent of chaos, to protect the sun god, Ra, and preserve the established order of the universe. “Seth was the only god strong and aggressive enough to drive off Apep’s attack and prevent him from swallowing the sun,” says Egyptologist Ian Taylor. “Without Seth, the sun would not have risen the following morning.” Seth also served as a divine protector of pharaohs, and was portrayed in this role in painted coronation scenes and images carved on thrones throughout the Middle Kingdom and the New Kingdom (ca. 1550–1070 B.C.).

The Pyramid Texts also contain early allusions to darker



myths. In several texts, driven by jealousy, Seth is said to have murdered his brother Osiris, one of the god-kings of early Egypt. In another, he enters into a protracted battle with his nephew Horus, the son of Osiris, for the throne of Egypt. In the end, other gods adjudicate the conflict, eventually ceding control of the Nile Valley to Horus, and foreign lands and the desert, which the Egyptians called the Red Land, to Seth.

During the first millennium B.C., some scholars claim, mentions of the god cease in hieroglyphic inscriptions. In some temples across the Nile Valley, images of Seth were defaced at an as-yet-undetermined time, though others, including some of those at one of the god's cult centers, at the "Gold City" of Nubt, were left untouched. Bolstered by a lack of evidence for temple dedications to Seth during this period and the emphasis on the god's negative aspects in mythological narratives popularized by the second-century A.D. Greek writer Plutarch, scholars have suggested that this deliberate erasure constitutes proof of a state-decreed proscription of the cult of Seth in the first millennium B.C.

However, recent discoveries at Mut—an ancient city in the 770-square-mile expanse of the Dakhleh Oasis, one of five oases in Egypt's Western Desert—paint a very different picture. Since 2000, archaeologist Colin Hope of Monash University has directed excavations at the site and uncovered evidence for a ritual landscape over which Seth presided as Lord of the Oasis. With the support of the state's central administration, as well as gifts bestowed by Egyptian pharaohs to ensure the temple's growth, the cult of Seth thrived in Dakhleh and surrounding oases throughout the first millennium B.C. and into the Roman period, through the second and third centuries A.D. At Mut and other cult centers and shrines across the desert, Seth was worshipped alongside other major deities, including his siblings, Osiris and Isis, and Amun, the king of the gods, not as an outsider, but as a significant and positive figure in his own right. "There's some evidence for hostility to the cult in the Nile Valley, but clearly this did not extend into the oasis region, where Seth remained a dominant deity," Hope says. "The whole of the Western Desert was the domain of Seth and was under his protection."

FROM THE BEGINNING of their recorded history, around 3000 B.C., the Egyptians considered the Western Desert a foreign region, set apart from the Nile Valley and Delta that comprised Upper and Lower Egypt. Old Kingdom inscriptions refer to two different groups living in this vast area. The



Tjehenu, who are mentioned in the earliest of these inscriptions, were adversaries against whom the Egyptians waged several battles. Appearing some time later were the Tjemehu, a nomadic or seminomadic people who roamed the Western Desert. No conclusive archaeological evidence for either group has been found. Hope's excavations at Mut have yielded some evidence of an indigenous group scholars call the Sheikh Muftah culture living in the oasis before 2600 B.C., but it is unclear what happened to these people or whether they were related to either of the groups mentioned in the Egyptian texts. As a result of their history of conflict with the Tjehenu and other groups beyond their

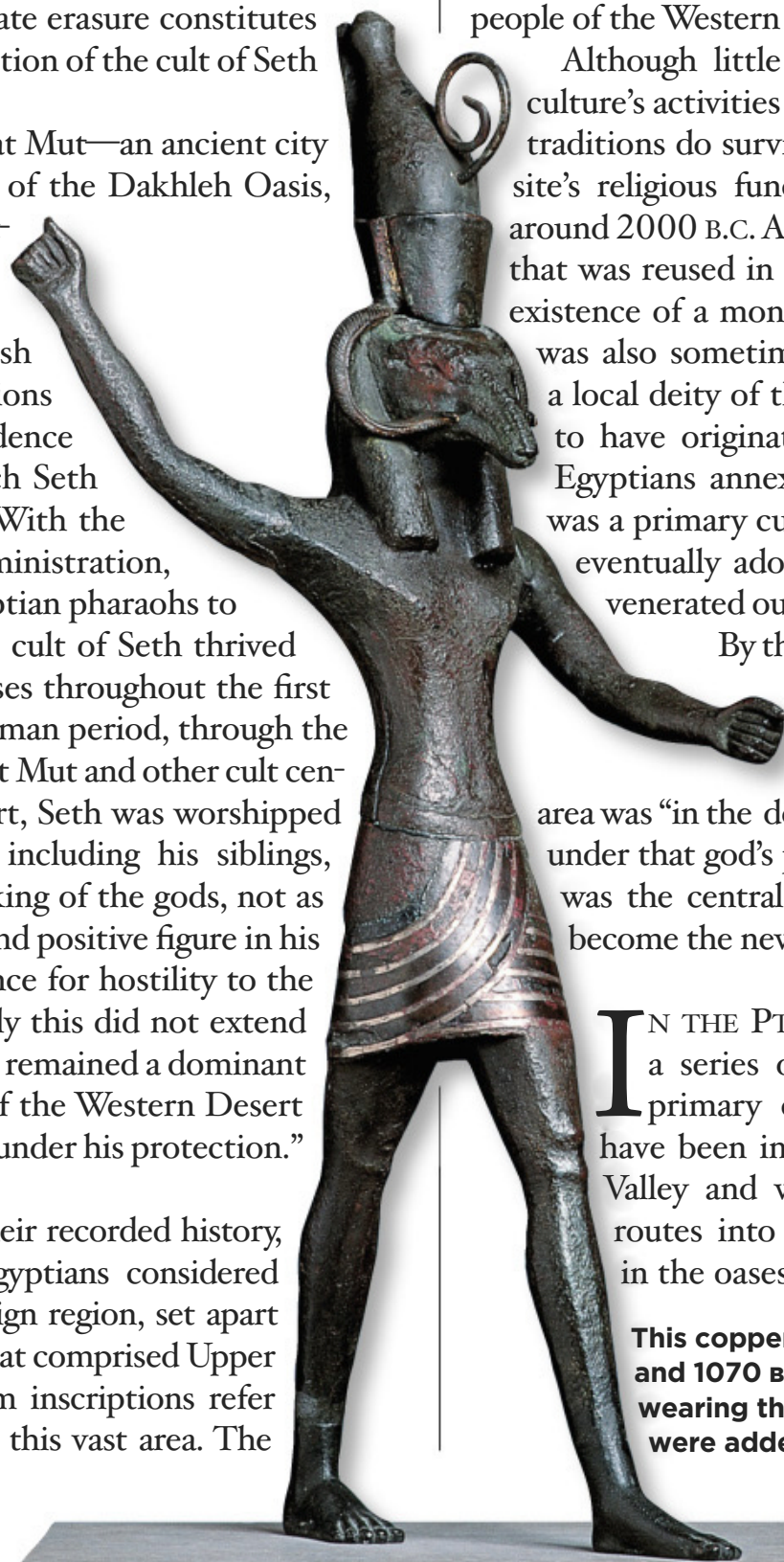
western borders, the Egyptians considered the oases strategically important. Following a series of exploratory missions, Egypt conquered the region by 2500 B.C., bringing Dakhleh and the other oases under its control. Hope says, "My opinion is that the Egyptian state was such an aggressive organization that the people of the Western Desert just succumbed to it."

Although little is known about the Sheikh Muftah culture's activities at Mut, possible hints of their religious traditions do survive there. The earliest evidence for the site's religious function dates to the Middle Kingdom, around 2000 B.C. An inscription engraved on a stone block that was reused in a later temple at the site indicates the existence of a monument dedicated to the god Igai, who was also sometimes called Lord of the Oasis. Igai was a local deity of the Western Desert whose cult appears to have originated in the northern oases before the Egyptians annexed the region. It is known that Mut was a primary cult center for Igai's worship, but he was eventually adopted into the Egyptian pantheon and venerated outside the oases, in Upper Egypt, as well.

By the time of the New Kingdom, Seth came to be linked with Igai at Mut. An inscription that Hope and his team found in the temple precinct records that the area was "in the domain of Igai," implying that it was still under that god's protection. However, by this time, Seth was the central figure worshipped there and he had become the new Lord of the Oasis.

IN THE PTOLEMAIC PERIOD (304–30 B.C.), when a series of Greek pharaohs ruled Egypt, four primary centers of Seth's cult are known to have been in use. Three of these were in the Nile Valley and were all situated at the beginning of routes into the Western Desert, and the fourth, in the oases, was likely the temple of Seth at Mut.

This copper statue dating to between ca. 1295 and 1070 B.C. portrays Seth with an animal head, wearing the double crown of Egypt. Ram horns were added later in place of Seth's ears.



Almost nothing of the settlement at Mut survives, apart from the foundations and poorly preserved walls of various buildings within the complex dedicated to Seth. Measuring up to 26 feet thick, the outer walls of this complex enclose an area measuring approximately 800 by 600 feet, making it the largest temple complex known in the Western Desert. In addition to the stone temple building, the complex contains a well and mudbrick structures that probably served administrative functions.

What still stands of the temple likely dates to the Ptolemaic period, though Hope hasn't yet determined the precise dating of its earliest construction stage. "We can always tell when we're coming down to where the original structure is," he says, "because they laid out a bed of clean, yellow sand on which to set the temple. This made it a pure area." The pavement inside the temple walls was constructed in part with blocks reused from earlier phases of the building and other monuments. Six of these blocks came from a monument to Amun, and are decorated with images of Horemheb (r. ca. 1323–1295 B.C.), the pharaoh who succeeded Tutankhamun on the throne. Another contains royal cartouches bearing the name of Ramesses IV (r. ca. 1153–1147 B.C.). "These blocks show that there was a major temple patronized by many very famous rulers of Egypt for at least five hundred years," Hope says. "It looks as though the temple was constantly being modified and extended, with earlier structures dismantled and new ones erected on top."

Among the temple's paving stones, Hope also found the earliest evidence for the cult of Seth at Mut in the form of a sandstone stela dating roughly to the New Kingdom's 19th Dynasty (ca. 1295–1186 B.C.). The stela is inscribed with a hymn to Seth, one of a small number of existing

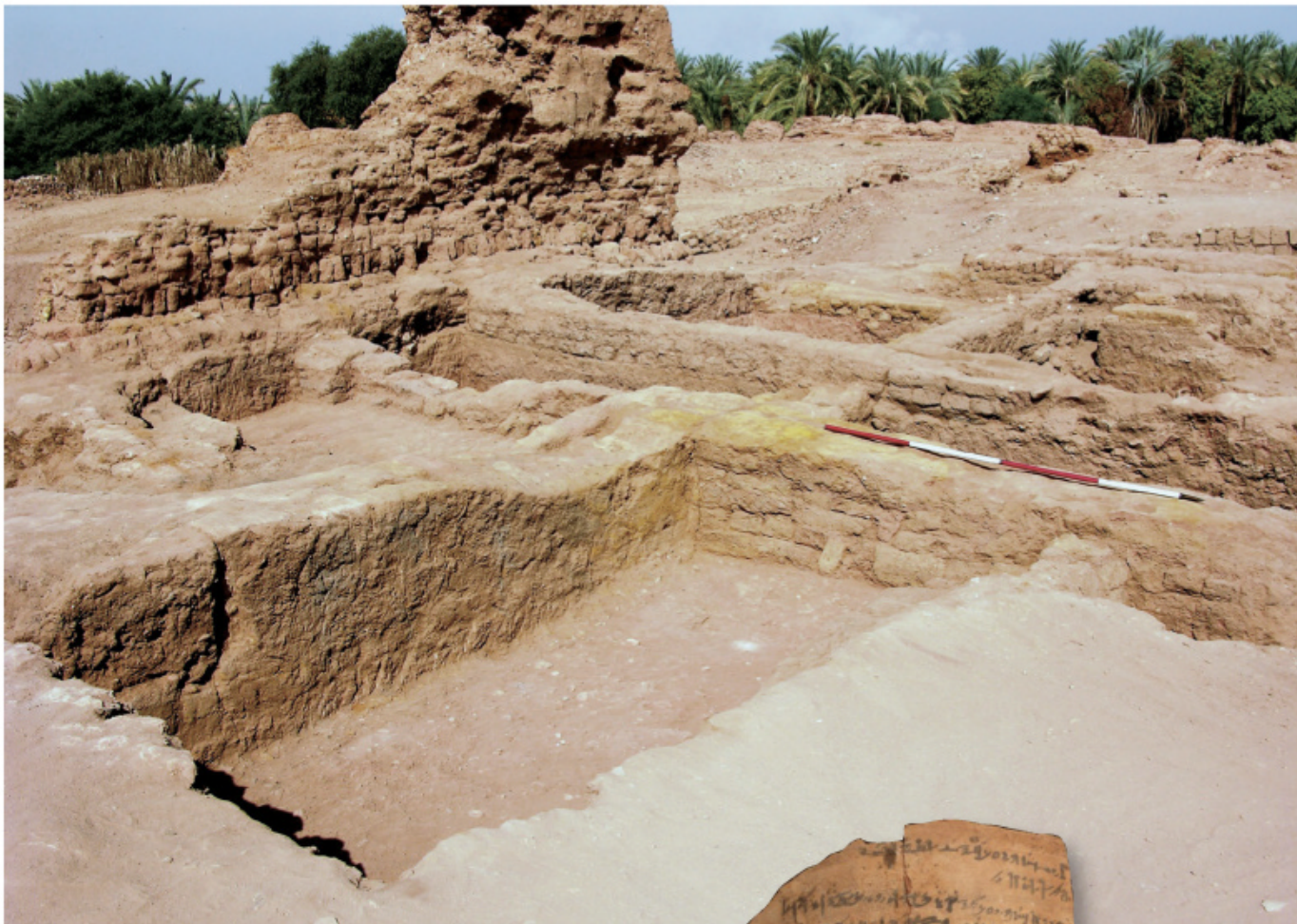
A sandstone stela dating to the New Kingdom (ca. 1295–1070 B.C.) records a rare example of a prayer to Seth, who is depicted at the top of the stela with his consort, Nephthys, and Amun, the king of the gods. The bottom section shows the stela's donor and his family.



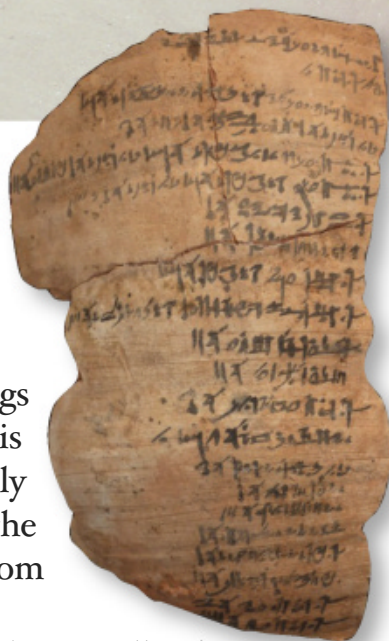
In this scene from the *Book of the Dead* of Lady Cheritwebeshet (ca. 1070–945 B.C.), Seth is shown spearing Apep, the serpent of chaos, as the god Ra, seated behind Seth, makes his nightly journey on a boat through the underworld.

prayers or invocations to the god. Above the text is a partially preserved image of Seth, who stands before Amun with his sister and consort, Nephthys. At the bottom is a scene showing the stela's donor and his family, probably expressing adoration of Seth. During the New Kingdom, Amun was venerated at Mut alongside Seth and a cadre of other deities, including Nephthys, Isis, and Osiris. Seth and Amun were also worshipped together at the temple of Amun at Hibis, in the Kharga Oasis east of Mut. Like other oasis temples, the temple of Seth at Mut was supported and maintained by Egypt's central administration. The largesse bestowed on the cult center by New Kingdom pharaohs and their successors, Hope says, belies the notion that there was a deliberate policy to erase Seth from the religious landscape of the Nile Valley. "All this activity seems to show that in the first millennium B.C., there was an active cult dedicated to Seth when, supposedly, he had fallen out of favor in the Nile Valley," he says.

In a side chamber of the temple, Hope and his colleagues unearthed hundreds of ostraca, or inscribed potsherds, most of which date from the late 25th to early 26th Dynasties, from about 700 to 600 B.C. The sherds detail relatively small offerings of bread and wine made to Seth by priests on behalf of a large number of worshippers, underscoring the continued significance of Mut as the center of the Seth cult in the Western Desert. Some are written in Demotic, a script frequently used during this period to make notes about economic transactions. Scribes working inside the temple kept detailed records of such transactions on the recycled sherds, including days of the month, quantities of wine offered to Seth and other gods, and the names of individual priests who



In a side chamber (above) of the temple at Mut, archaeologists unearthed hundreds of 7th-century B.C. potsherds, including this example (right) inscribed with lists of offerings to Seth and other Egyptian deities worshipped there.



made the dedications. On other sherds, offerings were tallied in Abnormal Hieratic, a script that is not usually found in Dakhleh but was commonly used by Egyptian religious authorities at Thebes, the capital of Egypt during much of the New Kingdom and again during this period.

A later archive of records unearthed in another small room details the cult's continuation into the Ptolemaic period, including offerings made around the time of the reign of Cleopatra (r. 51–30 B.C.), the last Ptolemaic ruler. These ostracons are all administrative in nature and demonstrate that Seth remained an important religious figure in Dakhleh well beyond the New Kingdom.

BECAUSE OF THE POOR preservation of the temple's standing walls, Hope and his team have found little evidence of its decoration. In the room where the Ptolemaic archive was located, they discovered a cache of plaster molds, stacked in a now-disintegrated wooden box that they believe might have been buried deliberately. "Anything that had been used in association with the divine couldn't be thrown away," Hope explains. "It had to be specially buried and protected, so it had power in its own right." The molds would have been used to create inlays, probably of faience, for a series of large images of Seth that

once adorned the temple walls. Numbers on the backs of the molds used for the wing feathers provided instructions for the placement of individual pieces on the wall. This suggests that the depressions in which to set the inlays would have first been carved into the walls as guides for the artwork's assembly. These images would have been about 13 feet across, which offers an impression of the immense scale of the temple structure.

With outstretched wings and a crown atop his falcon head, Seth is probably depicted in these images in one of his well-known mythological roles, harpooning Apep, the serpent of chaos. Similar iconography of the god found throughout the Dakhleh and Kharga Oases, particularly

his depiction in a relief from the temple at Hibis, has allowed Hope to tentatively date the molds to a range spanning from the 26th Dynasty into the Ptolemaic period, when a major refurbishment of the temple took place. Beneath the pavement of a structure to the west of the temple, Hope and his colleagues discovered figures that probably predate the molds, including a pair of miniature carved carnelian hippos and a copper alloy Seth animal figure that originally would have been attached to another object.

However, Seth's worship was not limited to the formal setting of a temple and offerings made by priests. Archaeologist Salima Ikram of the American University in Cairo and other researchers have identified petroglyphs of the god's image carved on rocks by ancient travelers journeying through the desert to and within the Dakhleh and Kharga

Oases, most of which seem to date to the New Kingdom. These drawings typically depict the Seth animal and are often accompanied by the names of the individuals who created them. Other examples portray the god with a falcon head, and are labeled as Seth. "It's extraordinary because we have so many signs of individual piety by people who are putting themselves in a very personal way under the auspices of Seth," Ikram says. Large quantities of the engravings are clustered in places that Ikram has identified as makeshift shrines to



This black-ink sketch of Seth in the temple of Tutu at the site of Kellis, where Seth was venerated through the second and third centuries A.D., may depict a procession of the god's cult statue.

the god, such as a site now known as Seth Rock. “These are concentrated sets of dedications where people are saying, ‘We are Seth’s people, we are under his protection, and he will care for us,’” she says. Ikram notes that these glyphs and shrines demonstrate that Seth’s significance in the region wasn’t limited to inhabitants of the oases. “If you lived in the oasis, you worshipped Seth,” she says. “And if you were from the Nile Valley, and you were going into the desert, you would worship Seth, too. Any sensible person would do just that.”

THERE IS EVIDENCE FOR the continuation of Seth’s cult at Mut and at other sites in the Dakhleh Oasis after the Ptolemaic period and into the Roman period. Over the past four decades, at the site of Kellis, seven miles

northeast of Mut, Hope has unearthed the only known temple dedicated to Tutu, another god of the desert, as well as Kellis’ patron deity. In a large, two-room shrine south of the temple, wall paintings show Seth alongside Nephthys and the other gods who were worshipped in Dakhleh. He is depicted not as the Seth animal, but as a human figure with wings. “In the New Kingdom, Seth was portrayed in the Nile Valley and Delta in both the form of a man with a Seth animal head and as a fully anthropomorphic man or a mummy with a man’s head,” says Taylor. Sometime in the later first millennium B.C., though, images of the Seth animal had begun to fall out of use in temple art and at the informal desert shrines. By about 300 B.C., the Seth animal had been completely eradicated. “This change in iconography is often tied in with the idea

that the Seth animal may have evoked more of the evil side of Seth, the uncontrolled anger, whereas the human form was a more moderated version,” says Hope. In another of the temple’s shrines, a black-ink graffito of a winged Seth shows him atop a pole carried by priests, which may represent a procession of the god’s cult statue from his primary oasis temple at Mut. In the second century A.D., this sketch, along with graffiti of other gods, was plastered over, not as a deliberate erasure of Seth’s image, says Hope, but as part of a redecoration of the temple complex.

Despite changes in Seth’s depiction over time, the belief that he protected the people of the desert explains, in part, why his cult endured for so long in Dakhleh while he seems to have become less frequently revered in Upper and Lower Egypt. Hope’s findings at Mut indicate complex geographic variations in ritual practice that challenge the traditional view of Egyptian religion as static and monolithic. “Egypt is always thought to be this culture where everything is the same, all the time, everywhere,” Hope says. “We’re now beginning to see that there’s a great deal of regional diversity.” Regardless of attitudes to Seth in the Nile Valley and Delta, his veneration assumed a vital and personal significance for many residing in the Western Desert. “What I think is really interesting is that there are official cultic practices going on in both the oases and the Nile Valley,” says Ikram. “But, at the same time, there is a whole vocabulary of expression of what people thought and believed as individuals.” ■



Plaster molds (top) that would have been used to produce mounted images of a winged Seth on a wall of the temple at Mut. One of the molds (above and seen in situ in the image at the top) is crafted in the shape of a falcon head, one of Seth’s forms.

Benjamin Leonard is a senior editor at
ARCHAEOLOGY.

The Founder's Tomb

Frescoes discovered in a Jordanian village narrate the early days of a once-cosmopolitan city on the eastern edge of the Roman Empire

By DANIEL WEISS

IN HIS *NATURAL HISTORY*, a first-century A.D. book that purports to contain everything then known about the world, the Roman historian Pliny the Elder briefly describes the Decapolis, a region at the Roman Empire's eastern edge. He notes that, as its Greek name suggests, the Decapolis consists of 10 cities—among them Damascus, Syria; Philadelphia, now Amman, Jordan; and Hippos, Israel—though he adds that “all writers are not agreed” precisely which cities should make the list. A later account, from the second-century A.D. Greek geographer Ptolemy, who lived in the Roman province of Egypt, jettisons one of Pliny's Decapolis cities, Raphana, but adds nine more, for a total of 18. One of the additions was a newly founded city with the Latin name of Capitolias.

Many cities of the Decapolis were originally Greek colonies settled beginning in the late fourth century B.C. by Alexander the Great of Macedon or his successors. However, Capitolias, which was most likely the last of the Decapolis cities to be founded, got its start much later, in A.D. 97 or 98, when Roman rule over the area was already well established. No written account of its founding is known, but a tomb recently unearthed in the Jordanian village of Bayt Ras, which occupies the former site of Capitolias, is providing researchers with a rare snapshot of its earliest days. The

tomb contains frescoes that appear to portray the ancient city's founding and construction.

Given the sparse—and sometimes contradictory—ancient references to the Decapolis, scholars have struggled to define what, exactly, it was, frequently describing it as a league or confederation formed after the Roman general Pompey conquered the region in 63 B.C. However, archaeologist Thomas Parker of North Carolina State University points out that there is no evidence of any significant political, military, or commercial alliance among the cities. Rather, the Decapolis appears to have been an administrative district within the Roman province of Syria, and the cities largely autonomous entities. “These cities had territories that were more or less contiguous and formed a kind of Greco-Roman cultural unit immersed in a sea of indigenous Semitic populations,” says Parker. The newly discovered tomb provides a vivid display of the area's rich blend of cultures, in which speakers of Greek, Latin, and Semitic languages mixed their ways of life—and their words—in surprising ways.

THE BAYT RAS TOMB is divided into two chambers, one of which contains a basalt sarcophagus and is covered on three walls with a pictorial narrative measuring some 56 feet long. The painting features a bewildering



This tomb wall in Bayt Ras, Jordan, contains the beginning of a narrative illustrating the founding of the Greco-Roman city of Capitolias in the late 1st century A.D. It includes (above left) gods at a banquet and (above right) an estate thought to have once occupied the site.



1



2



3

1. A trio of deities sitting on thrones are identified by Greek inscriptions as (left) the Tyche of Capitolias, Zeus Kapitoliος (center), and (right) the Tyche of Caesarea Maritima. 2. A Roman citizen wearing a toga, who researchers believe was the founder of Capitolias and the owner of the tomb, pours wine on an altar as part of a sacrifice. 3. A man falls from the city wall and cries out, "Alas for me, I am dead!" while one of his coworkers despairingly holds his head in his hands. 4. As two men fight on the building site, the one on the left calls the other an idiot.



4



Left to right: The god Dionysus helps clear the site where Capitolias will be built; camels carry building materials to the construction site; workers cut stone for use in building the city. The inscriptions in this scene have not yet been translated.

variety of more than 200 people, deities, and animals. The narrative opens with a depiction of the Greco-Roman gods at a banquet, and moves on to show what researchers believe to be an estate occupying the city's future site. Next, deities, including Dionysus, help men cut down trees to clear the land and dig the tomb. After this, a trio of gods is portrayed sitting on thrones while below them a man in a toga performs a sacrifice. A Greek inscription identifies the central god as Zeus Kapitolios, the Greek version of Jupiter Capitolinus, the chief god of the Roman pantheon, after whom Capitolias is believed to have been named. Flanking him are the local Tyche, a Greek goddess of fortune thought to oversee a city's destiny, and the Tyche of Caesarea Maritima, the capital city of the Roman province of Judea, which was located on the Mediterranean coast north of present-day Tel Aviv. The construction of the city's wall is then illustrated in great detail, including stone cutting, transportation of building material by camel, and architects and foremen at work. There are also scenes of workplace accidents and fights. The illustration's final panel features an assembly of the city's gods and goddesses.

These frescoes are a rare instance in which the founding of a Greco-Roman city is recorded in images, says Pierre-Louis Gatier of the History and Sources of the Ancient Worlds Lab in Lyon, France, who is part of a team studying the tomb's illustrations. The presence of a range of deities makes clear that both divine and temporal authorities have sanctioned the establishment of the city. "There are a lot of literary descriptions of the founding of cities," says Gatier. "At the beginning, people ask the gods whether they can found a city. In the tomb, you have a visual answer in the way the gods help the people build it. They are saying, 'You can found the city, and you can found it here.'" Likewise, the inclusion of Zeus Kapitolios and Tyche of Caesarea

Maritima signals political approval of the project by Rome and the provincial government.

The man in the toga beneath these gods is clearly a Roman citizen, Gatier says. This is indicated by his attire and the fact that he carries out his sacrifice in the Roman style, with his head veiled. He was most likely not from Rome, but rather had been awarded Roman citizenship by a regional imperial authority, or inherited it from his father, who would have received it in a similar manner. "At this time, Roman citizenship was a kind of gift the Romans made to important or wealthy people to set them apart from those around them," Gatier says. He and his colleagues believe that the man in the toga is likely to have been the founder of Capitolias, and the tomb's occupant. Thus, they have named it the Founder's Tomb. While bodies were generally cremated before burial in the Roman West during the second century A.D., in the East this practice was uncommon. Further clues to the man's identity may be revealed by ongoing analysis of the bones of multiple people that have been retrieved from the sarcophagus. In addition, his name may have been carved into the tomb's lintel, which has not yet been investigated.

ONLY A SMALL MINORITY of tombs in the Roman East contain any painted images at all. Even fewer depict the founding of a city. But what truly distinguishes the Bayt Ras tomb is that it gives voice to a group of people who were rarely afforded one in the ancient world. In more than 60 inscriptions, the laborers depicted in the illustrations describe what they are doing—or, sometimes, simply speak their mind. "Dig!" a man perched at the edge of the tomb orders. "I *am* digging," a worker replies. On the building site, one of two men engaged in a fight calls the other an idiot. Another man falls from the rampart and laments, "Alas for me, I am dead!" while a despondent coworker cradles his head in his hands. These inscriptions offer an unusual opportunity to hear from the people who are doing the hard work of building the city, explains Parker.



When the researchers first investigated the inscriptions, they were surprised to find that, while all had been written using Greek characters, only a few, such as the names of the trio of deities, expressed Greek words. The rest were approximations of Aramaic, a language widely spoken by Semitic people in the region that was typically written using an alphabet similar to the Hebrew one. This transliteration produces some odd quirks—for example, Aramaic writing does not use vowels, but the Greek-lettered inscriptions include them. “These are completely phonetic transcriptions,” says Jean-Baptiste Yon, an Aramaic specialist at the History and Sources of the Ancient Worlds Lab. Although there are some examples of Aramaic transliterated into Greek letters, Gatier notes, such as a number of lines spoken by Jesus in the Gospels, they are quite uncommon. “These are the words of the ordinary people, the builders, and they chose to write in Aramaic because it was part of their identity, of their culture,” he says. “They wrote using Greek letters because they weren’t literate in Aramaic, but had learned to speak it at home or at the playground.”

Beginning in the late second century B.C., Greek political control over the Decapolis region waned, and its cities were taken over by Arabic- and Aramaic-speaking Semitic peoples. But even after the cities came into the Roman orbit in the first century B.C., they retained strong Greek and Semitic elements. While Capitolias was founded at least a century later, this cultural mix was present there, too. “As you walked along the streets of the city, you would have heard Greek being spoken, probably more by the upper-class folks, and Semitic languages,



such as Arabic and Aramaic, among the lower-class folks,” says Parker. “Once you left the confines of the city, you would find the vast majority of people speaking Semitic languages. Latin was the language of law and military command, so you would hear it in the law courts and from any soldiers who were around.”

In addition to the Founder’s Tomb, a range of items previously discovered at Bayt Ras provides evidence of the

complex intermingling of cultures that existed in the cities of the Decapolis in Roman times. “One way to move up in the power structure of this world was to assimilate Greek culture and, to some degree, Roman culture,” says Parker. Another painted tomb from the second century A.D. includes a depiction of a scene from the Trojan War, in which the Greek hero Achilles drags the Trojan Hector’s corpse, demonstrating that people honored what they saw as their Greek roots. Another example is found in a Greek inscription on a tombstone, also dating to the second century A.D., that appears to capture an episode of ancient social climbing. It includes the name of the deceased’s father, which is Semitic, along with those of the deceased and his brother, both of which sound Roman. By contrast, the laborers who built the Founder’s Tomb used the Greek alphabet not to elevate their social station, but to express their thoughts and concerns, however mundane. “They are, in a sense, calling to us, saying, ‘Hey, I’m here, and what I’m doing is valuable,’” Parker says. “That is a very unique perspective that we don’t often get from the ancient Mediterranean world.” ■

Daniel Weiss is a senior editor at *ARCHAEOLOGY*.

REMEMBERING THE SHARK HUNTERS

**Unique burials show how
ancient Peruvians celebrated
dangerous deep-sea expeditions**

By ERIC A. POWELL

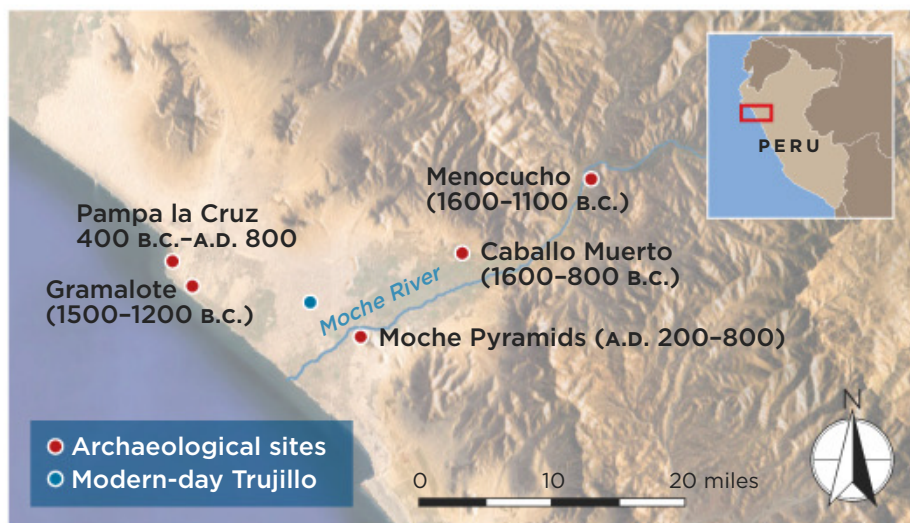
EXPLORING THE BELIEFS of complex cultures that flourished before the advent of writing challenges archaeologists to imagine how the buildings and artifacts those people left behind express long-vanished belief systems. On the Moche River, six miles inland from the arid northern coast of Peru, loom structures that were central to a people who left behind abundant evidence of their worldview. These buildings, the 15-story adobe-brick Pyramids of the Sun and the Moon, are among the largest built by the Moche, who thrived in northern Peru from about A.D. 200 to 800. Moche artisans produced a rich array of murals, pottery, and other artifacts depicting humans engaged in ceremonies and interacting with mythic creatures. Thanks to these vivid depictions and the lavish burials of priests and nobles, archaeologists can reconstruct how the Moche may have conducted rituals at major sites such as the Pyramids of the Sun and the Moon. But what of the people who lived in smaller settlements far from the major Moche centers? What religious traditions did they follow and what beliefs did they rely on to make sense of the world around them?

In an effort to answer these questions, University of Florida archaeologist Gabriel Prieto has spent years excavating ancient fishing villages north of where the Moche River flows into the Pacific Ocean. In the summer of 2019, he and his team excavated a stone-and-mudbrick

The remains of marine animals buried at the ancient Peruvian site of Pampa la Cruz include, clockwise from top left, the skeleton of a sunfish, the teeth of a shark, the complete 6-foot-long skeleton of the same shark, a yellowfin tuna skull, and a complete 8-foot-long *Kogia* whale skeleton.







platform on a bluff overlooking the Pacific coast at a site known as Pampa la Cruz. Such platforms, which served as temples, were often built by ancient Peruvians, including the Moche, to be used by priests and other important members of the community as stages on which to perform religious rites. Prieto soon discovered that this particular platform, rising a modest six feet high, was decorated with a typical Moche painting that depicts three warriors leading two naked captives. It also concealed evidence of a unique ritual event. Beneath the platform, Prieto unearthed the burials of more than a dozen deep-sea creatures, including nine sharks. The skeletons of two sunfish and two yellowfin tuna, uncommon species on the Peruvian coast, were also identified, as well as two *Kogia* whales, which are some of the rarest toothed whales in the world. All the animals seemed to have been purposely buried by the people of Pampa la Cruz, who constructed the platform sometime between A.D. 500 and 750. “We were very surprised,” says Prieto. “Perhaps there were offerings of sea animals elsewhere in South America, but we haven’t found them yet.”

The only comparable discovery in the New World was made more than 2,000 miles north, in Mexico City, where the Mexicas, or Aztecs, buried marine species as well as land animals in and around the ritual site of Templo Mayor. “The Aztecs were later than the Moche,” says Harvard University archaeologist Jeffrey Quilter, who visited Pampa la Cruz when the burials were being unearthed. “But both examples reflect the widely shared appreciation by indigenous Americans of animals as important, powerful creatures.” He notes that different animals were sometimes believed to be masters of different planes of reality, including the underworld, which was often imagined as an aquatic realm. “The Pampa la Cruz case is interesting because the animals are oceanic,” says Quilter. “So it seems that the temple had a special

role as an intercessor or expression of the forces of the deep.”

Prieto believes that the burials beneath the platform are also an expression of a ceremonial tradition that flourished in the small fishing settlements of the northern Peruvian coast for thousands of years. There, the extremely cold waters of the Humboldt Current create the conditions for a rich, diverse fishery that, even today, is one of the world’s most bountiful. Evidence unearthed by Prieto at Pampa la Cruz and elsewhere shows that rituals based on deep-sea fishing were vital to the people who plied the waters off this stretch of coastline. They were so crucial, Prieto thinks, that they were eventually incorporated into the belief system of the greater Moche world, and help explain how this religious and political system spread throughout northern Peru.

PRIETO GREW UP CLOSE TO Pampa la Cruz, in the modern-day community of Huanchaco, a coastal resort town about six miles north of Trujillo, Peru’s third-largest city. Huanchaco is home to the last fishing community in South America that relies on traditional techniques that hark back to pre-Columbian times. These fishermen still use watercraft made of reeds that differ little from those used hundreds, even thousands, of years ago. “I grew up knowing these fishermen,” says Prieto, who was drawn to study the lives of the ancient residents of small seaside villages. “I was interested in looking at history from the bottom up. I wanted to explore how common people lived.”



A 4-inch-long model of a reed boat (top) and a cache of shark teeth (above) are among the burial offerings discovered in the village of Gramalote, a mile and a half from Pampa la Cruz. Gramalote was occupied from 1500 to 1200 B.C.

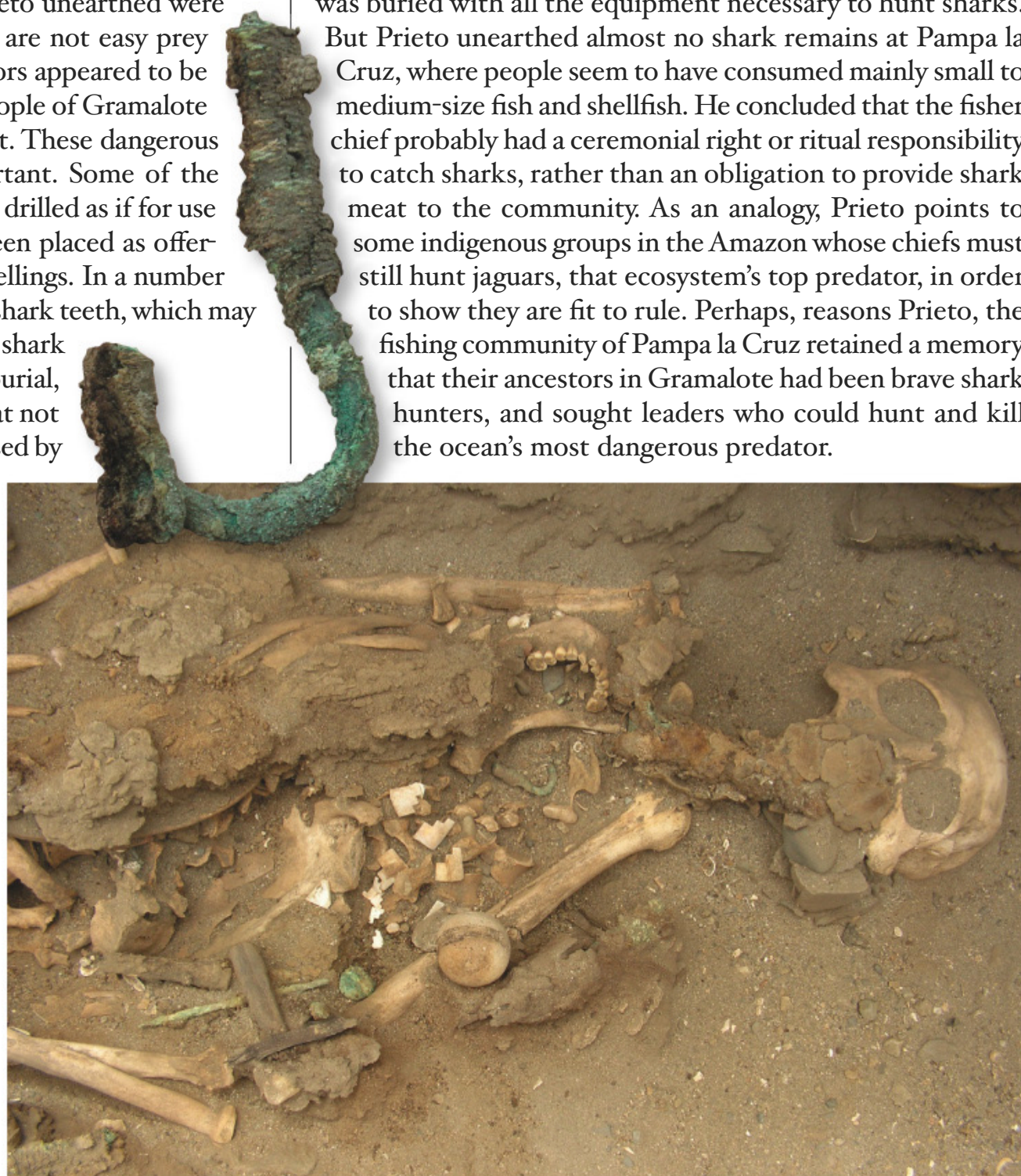
In 2010, Prieto began digging at Gramalote, a prehistoric fishing village with an ancient population of some 300 people that dates to between 1500 and 1200 B.C. Gramalote is just a mile and a half south of Pampa la Cruz, and was occupied at the same time as Menocucho and Caballo Muerto, two larger sites in the nearby Moche River Valley, where hundreds of people lived amid monumental pyramids decorated with murals and adorned with columns. Ceremonial events that drew people from the entire Moche Valley were held at these sites. Previously, archaeologists had proposed that Gramalote was a peripheral community where people focused on providing food, mainly shellfish, to the inhabitants of Menocucho and Caballo Muerto.

Prieto's excavations soon showed there was much more to life in Gramalote than gathering shellfish. He and his team discovered that the villagers practiced a range of crafts, including basketry and bone carving, and processed large amounts of red pigment. Prieto also collected more than 21,000 fish and 12,000 sea mammal bones, suggesting that deep-sea fishing was just as important as collecting shellfish. Most surprisingly, 16,000 of the fish bones Prieto unearthed were shark vertebrae. Then, as now, sharks are not easy prey for humans, but hunting these predators appeared to be one of the main occupations of the people of Gramalote and one of their major sources of meat. These dangerous animals were also symbolically important. Some of the shark vertebrae had been polished and drilled as if for use in necklaces, and whole sharks had been placed as offerings under some of the Gramalote dwellings. In a number of burials, Prieto discovered caches of shark teeth, which may have accompanied particularly skilled shark hunters to the afterlife. In one such burial, Prieto also found a reed model of a boat not substantially different from the ones used by the fishermen of Huanchaco today.

The people of Gramalote also seemed perfectly capable of worshipping on their own, without having to make the journey to Menocucho or Caballo Muerto. Prieto unearthed the remains of a small temple complex in Gramalote that bore no resemblance to the grander ritual compounds in the nearby valley. The villagers probably did supply their inland neighbors with food, but they also lived in a self-sufficient community with its own traditions. Prieto notes that when the Spaniards reached the area in the sixteenth century, they found that people in fishing communities spoke a different language from those living just a few miles inland. Perhaps such independence had its roots in an ancient sense of community, centered in part around feats of deep-sea fishing.

GRAMALOTE WAS ABANDONED around 1200 B.C., after which archaeologists have an almost 1,000-year gap in their knowledge of the area. Prieto thinks the settlement was moved to a site where Huanchaco's colonial-era church now stands, making excavation impossible. By 400 B.C., however, a community of some 1,000 people is thought to have been living at Pampa la Cruz. Prieto's excavations there have revealed that these people did not eat nearly as much shark meat as their ancestors in Gramalote had, but that fishing for sharks still seemed to be symbolically important.

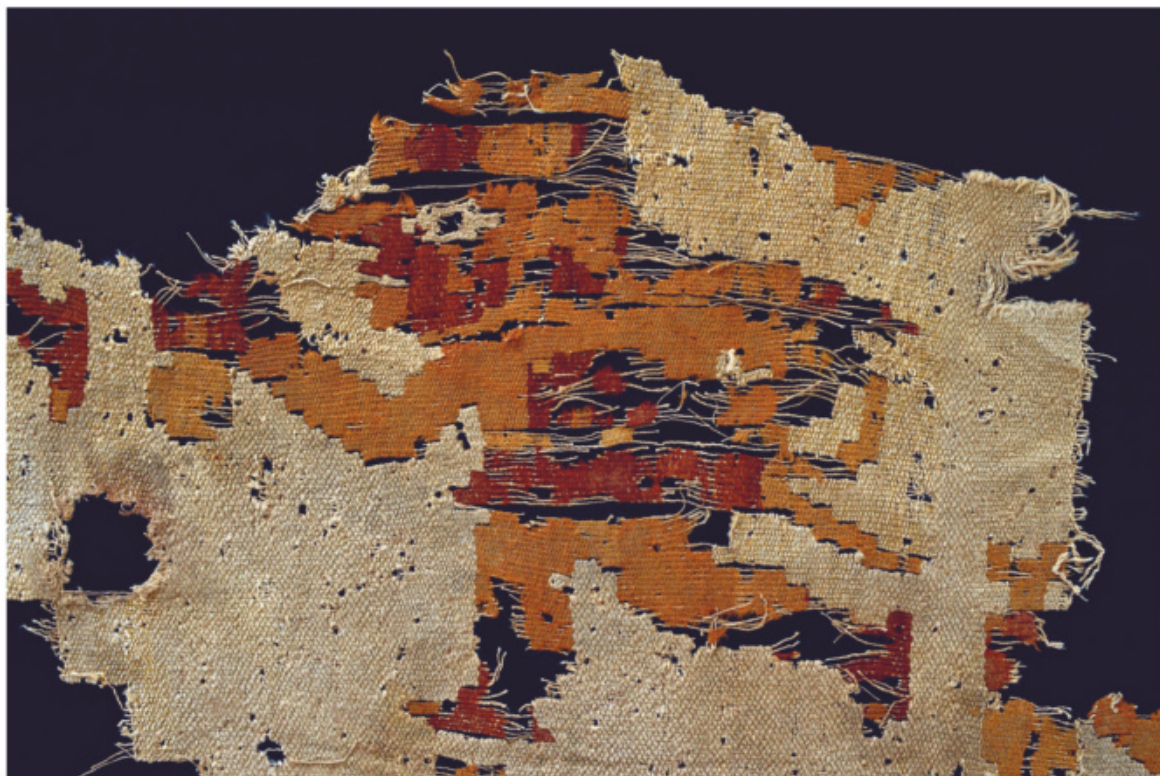
Prieto found that the burial of one high-status man at Pampa la Cruz contained six metal fishhooks, including the largest example ever unearthed in Peru. These hooks are so big that they would only have been used to hunt large fish such as sharks. The grave also contained two cobblestones once wrapped in cotton strings that were likely fishing lines, as well as two flat bone tools that resemble implements still used today by fishermen in Huanchaco to repair nets. This high-status man, whom Prieto dubbed the "fisher chief," was buried with all the equipment necessary to hunt sharks. But Prieto unearthed almost no shark remains at Pampa la Cruz, where people seem to have consumed mainly small to medium-size fish and shellfish. He concluded that the fisher chief probably had a ceremonial right or ritual responsibility to catch sharks, rather than an obligation to provide shark meat to the community. As an analogy, Prieto points to some indigenous groups in the Amazon whose chiefs must still hunt jaguars, that ecosystem's top predator, in order to show they are fit to rule. Perhaps, reasons Prieto, the fishing community of Pampa la Cruz retained a memory that their ancestors in Gramalote had been brave shark hunters, and sought leaders who could hunt and kill the ocean's most dangerous predator.



A 6-inch-long copper fishhook (top), is one of 6 such objects discovered in the grave of a man (above) who was buried at Pampa la Cruz. He is now known as the "fisher chief."

BETWEEN A.D. 500 AND 550, Pampa la Cruz became part of the Moche world. The main village was demolished and moved 100 yards closer to the ocean. The people of Pampa la Cruz began to be buried with Moche pottery and other artifacts, such as textiles, depicting humans rendered in the Moche style. Prieto found that the storage areas of houses dating to this period were significantly smaller than those in the dwellings that preceded them. Perhaps the villagers were now compelled to supply food to people living some distance away. "It's possible that once they were part of the Moche world, they had to exchange or barter most of their food at the urban center around the pyramids," says Prieto. The process of becoming part of the Moche world was a complex one, and, notes Prieto, probably not entirely peaceful. Many human burials his team has unearthed at Pampa la Cruz dating to this period show evidence of violent trauma.

Prieto was convinced that even as the people of Pampa la Cruz fell under the influence of the Moche belief system, deep-sea fishing likely retained its important symbolic role. He was particularly interested in the fact that a common motif on Moche pottery features extravagantly costumed fishermen hunting large sea beasts from reed boats. The animals are sometimes identifiable as sharks or other deep-sea fish, but they are also depicted as chimeras, fantastic creatures that combine features in improbable and frequently bizarre combinations, such as beasts with shark jaws and human limbs. Often the boats themselves



A textile (top) from Pampa La Cruz depicts a typical Moche figure and resembles a scene (center) from a mural that decorates a temple platform at the site. A line drawing (above) of artwork on a Moche ceramic vessel shows a mythical fishing expedition, with figures seated on animate reed boats hooking fantastical fish.

seem to be alive, and are portrayed aiding the fishermen in hunting down marine prey. In these depictions, the reed boats piloted by the mythic fishermen resemble the ones used in Huanchaco today.

As he studied these images, Prieto concluded that the people responsible for the spread of the Moche belief system incorporated the symbolism of deep-sea hunting that was so important to the people of small fishing communities such as Pampa la Cruz into their own religion. Perhaps, thought Prieto, these already-ancient beliefs tied to hunting sharks and deep-sea chimeras were included in the Moche ritual system to bolster the appeal of the new ideology to the people of the coast. Thus, the shark-hunting traditions

of the Gramalote villagers may have lived on in Moche art, and perhaps even in Moche rituals themselves. “It was clear for me the Moche took this tradition and included it as part of their religious discourse,” says Prieto. “It was one way to legitimize incorporating the fishing villages into their territory.”

Prieto’s theory received dramatic support when he unearthed the burials of the sharks and other deep-sea creatures beneath Pampa la Cruz’s Moche-era platform. Whether it was local people or Moche priests who were responsible for these burials, the people who interred the animals honored ancient rites associated with deep-sea fishing. The fish and whales were even arranged in such a way that they all appeared to be swimming east, as if migrating inland from the waters of the Pacific toward the Moche Valley. Whoever managed to hunt the animals had to have been highly skilled. Similarly, the people who placed the fish and whales below the platform also clearly had intimate knowledge of their behavior. “We don’t know for certain who buried the sea creatures,” says Prieto. “But the fact that they were included in the construction of such an important building is probably the result of a negotiation among higher-ups such as Moche priests and local leaders who had their own tradition that went back to the days of Gramalote.”

THE PAMPA LA CRUZ BURIAL ground will contribute to archaeologists’ understanding of the ideology and rituals of the Moche world. “Previous generations of scholars envisioned the Moche spreading their ideology through warfare,” says Denver Museum of Nature & Science archaeologist Michele Koons. “There was this vision of the



A member of the traditional fishing community of the Peruvian village of Huanchaco paddles a type of reed boat whose form has remained essentially the same for some 3,000 years.

Moche conquering river valley after river valley and bringing their religion with them. But that’s changing.” New excavations in northern Peru are showing that the Moche world, which was once thought of as unified, was actually much more diverse. It now seems that Moche traditions were not spread strictly through violent coercion as had been thought, but also through a complex series of encounters between the Moche and local people who had their own belief systems. These beliefs weren’t extinguished, but instead found new expressions within the Moche tradition. “This isn’t a story about conquest,” says Koons. “It’s about adaptation.”

The Moche world came to an end sometime around A.D. 800, after which the village of Pampa la Cruz was abandoned. People belonging to the later Chimu culture used the site as a cemetery, where they interred hundreds of ritually sacrificed children (“Peruvian Mass Sacrifice,” January/February 2020), but it’s possible the beliefs associated with the fisher chiefs didn’t die out completely.

Today, the traditional fishermen of Huanchaco avidly follow Prieto’s excavations. After learning about the discovery of a cemetery that included oceanic creatures, they reminded him that, in their grandparents’ time, fishermen would always offer the biggest fish in their catch to God. They would do this as an act of thanks for the abundance of the ocean’s bounty, perhaps an echo of the beliefs that led the people of Pampa la Cruz to bury sharks beneath their temple. ■

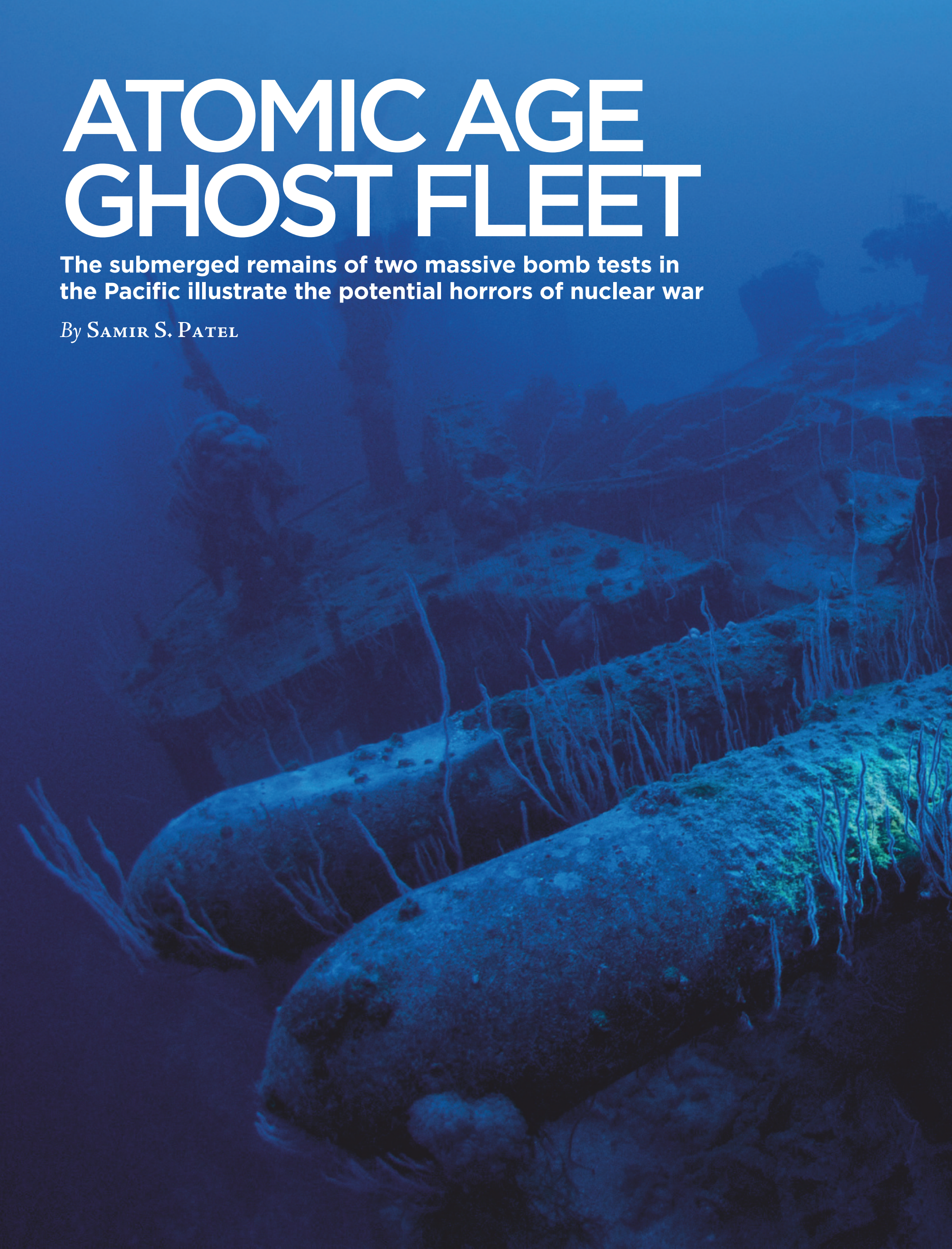
Eric A. Powell is deputy editor at *ARCHAEOLOGY*.

To see more images of burials and artifacts from Pampa la Cruz, Peru, go to archaeology.org/pampa.

ATOMIC AGE GHOST FLEET

The submerged remains of two massive bomb tests in the Pacific illustrate the potential horrors of nuclear war

By SAMIR S. PATEL

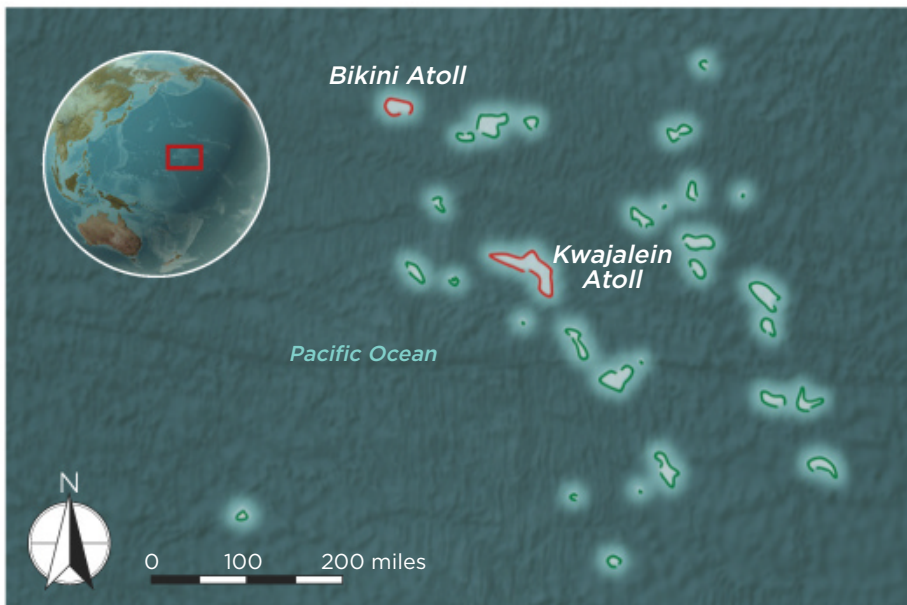


A full-page background image showing a diver in a dark blue environment, illuminated by a bright light. The diver is positioned in the upper half of the frame, looking down at a large, dark, cylindrical object (a torpedo tube) that dominates the lower half of the frame. The scene is underwater, with bubbles visible near the diver's head.

A diver explores the torpedo tubes of USS *Lamson*, one of the 12 vessels sunk during the Operation Crossroads nuclear tests at Bikini Atoll in the Marshall Islands in July 1946.

CONSIDER WHAT IT TOOK to make the event happen: nearly 250 ships, tens of thousands of pieces of equipment, both military and scientific, dozens of scientists, 21 observers from 10 countries—plus press—42,000 soldiers and other personnel, eight B-17s on autopilot and dozens of other planes, 750 cameras, and more film than Hollywood shot that year. And two of the most sophisticated weapons ever made. Operation Crossroads was the first public demonstration of nuclear arms, the first nuclear detonations after Nagasaki, and the first peacetime test that could be measured and quantified. Planning began just six months after World War II ended. The Army and Navy chose the site, Bikini Atoll in the Central Pacific's Marshall Islands, because it was isolated and had a wide lagoon and predictable weather. The 167 native Bikinians had to be convinced to be relocated, mines were cleared, channels blasted, towers built, and a target array of 95 defunct ships was assembled. In July 1946, two nuclear weapons, Able and Baker, were detonated in the air and in the water, respectively. It had taken less than five months to pull it all off.

More than 70 years later, Art Trembanis had logistical challenges of his own, including limited time and money, and an ambitious scientific mission. Trembanis, a geological



oceanographer at the University of Delaware, along with maritime archaeologists Mike Brennan and James Delgado of SEARCH, had been tasked with making the first complete three-dimensional sonar map of what Crossroads had left behind in the lagoon—12 shipwrecks in an area a little larger than New York’s Central Park, a concentration of modern wrecks without equal in the world. The study would provide the first-ever look, with modern imaging technology, at a site that marks a pivotal moment in the twentieth century. But first Trembanis had to figure out how to pull it off. “How am I going to get there, how am I going to get my equipment there, how am I going to get my people there? How are we going to operate?” he wondered. In his lab, Trembanis has many ways to observe and monitor the seafloor, from autonomous underwater gliders to an amphibious four-wheel ATV. But Bikini Atoll required a nimbler touch—it’s far too remote to travel any way but light, but you have to be prepared. “Once you’re in Bikini,” he says, “you’re on your own.”

A JOINT ARMY-NAVY TASK FORCE named the July 1946 series of tests “Crossroads” because it was a turning point for warfare. The tests were intended to help the military gauge its future in a world where a city-destroying bomb could be dropped from a plane. “There were a number of good reasons not to conduct the two atomic bomb tests at Bikini Atoll in 1946,” says retired Rear Admiral Samuel J. Cox, director of the Naval History and Heritage Command. “During the acrimonious post-World War II interservice debates about future U.S. service roles and missions, the Navy believed it necessary to go ahead with the tests as a means to counter strategic airpower advocates who claimed the atomic bomb made surface warships obsolete.” The operation was a combat simulation, but it was other things, too—a demonstration of might and wealth, an experiment, and a victory parade. One German and two Japanese warships were in the target fleet, making it also a ritual of finality.

Like the device dropped on Nagasaki, Able and Baker were plutonium implosion bombs, with an estimated yield of around 20 kilotons of TNT each. There were criticisms from atomic scientists and others, among them that the tests might shatter the mystique surrounding nuclear weapons and reveal that they were just another “boom” in a world full of them. At first, that’s what seemed to happen: Able was a letdown. Baker was another story entirely.

At 9 a.m. on July 1, Able exploded, as planned, 518 feet in the air above a fleet of empty ships, though it missed its target, the battleship USS *Nevada*, by more than 2,000 feet. The blast hit the five closest ships hard, and caused hurricane-force winds, but sank only those five ships. “From a structural perspective, even an atom bomb had to hit pretty close to a ship to sink it,” Cox says. Another 14 ships were disabled. “[The testers and observers] were underwhelmed,” says Brennan. As a result, he adds, “They weren’t quite so cautious with Baker—and they needed to be.”

Baker was placed in a caisson and suspended 90 feet underwater, halfway to the ocean floor, from the doomed amphibious



Images of the atomic tests Able (above) and Baker (right) show Able being detonated 518 feet above the surface of the Pacific Ocean and Baker 90 feet below it.

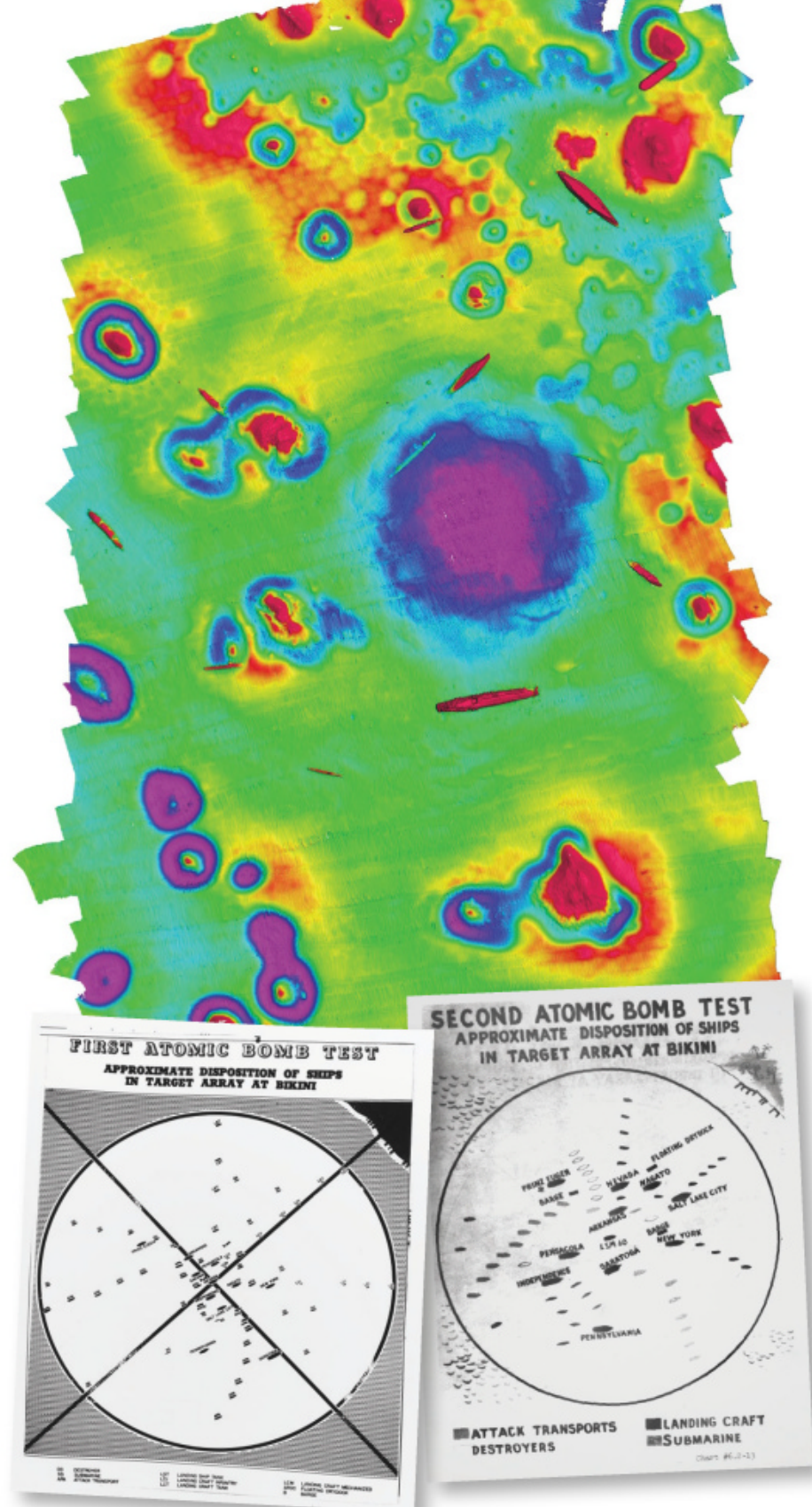


ous assault ship *LSM-60*. When it detonated, at 8:35 a.m. on July 25, it vaporized the water in a 500-foot radius, created a supersonic hydraulic shock wave, and sent four million tons of sand and water up into a hollow column 1,000 feet in diameter—not a mushroom cloud of debris, smoke, and condensed water vapor, but more like a geyser of sea water that came crashing back down just seconds later. A series of 10 atomic tsunamis and a spray of water droplets called a base surge, similar to the mist at the bottom of a waterfall, swept across the target fleet. Without the blinding flash of an atmospheric detonation such as those at Hiroshima and Nagasaki, and with the ships visible for scale, it was the first time the world saw—really saw—a nuclear weapon in action.

The blast sank seven ships in the lagoon and crippled 11. But the others weren't spared. Airborne blasts like Able are considered “self-cleansing”—after the initial burst, their radioactive material is swept into the stratosphere. Radioactive material from Baker, on the other hand, including irradiated seawater, pounds of fission products, and unfissioned plutonium, was spread locally. The tsunamis and surge penetrated every compartment on every target ship with radioactive mist. Had there been anyone within 2,000 feet, the radiation would have been fatal in a minute. Fifteen miles away, it would have taken three hours. Had the ships been manned, it is estimated that more than 35,000 people would have died. Nonetheless, its lasting effects added one more first to the list for Operation Crossroads. Nuclear chemist and Nobel Prize winner Glenn T. Seaborg, who chaired the Atomic Energy Commission and advised 10 presidents on nuclear policy, called Baker “the world's first nuclear disaster.” No plan had been made for decontamination of the fleet, and an even bigger concern turned out to be the dusting of plutonium particles, which are extremely toxic when inhaled and were impossible to track. On August 10, decontamination efforts were halted for safety reasons. A planned third test in the series, a deepwater detonation called Charlie, was canceled. “Within a few years of the tests, all U.S. Navy ships were built with measures designed to counter the effects of radiation in the case of a nuclear war, such as the ‘counter-measure wash-down system’ with which all U.S. Navy ships to this day are equipped,” says Cox. “Fortunately, such systems have never been used as they were intended, or had to prove they really work.”

Able was inconclusive in terms of its lessons for military strategists. But Baker, which showed how effectively a bomb could deliver radiation, broke military strategy. “The realization after Crossroads was that there is no defense,” says Delgado. There was only not getting hit—by hitting first, or by building weapons so ludicrous that no one dare use them. Operation Crossroads codified the terms of the Cold War. “And thus,” Delgado adds, “begins mutually assured destruction.”

ALL THE CREWED SUPPORT SHIPS for Crossroads were eventually decontaminated and returned to service. Of the 95 total ships used as targets in the tests—including four battleships, two aircraft carriers, 13 destroyers, and eight submarines—only nine could be decontaminated and sold for scrap. Many of the rest were subject to further attempts at



A newly created sonar image (top) of the Bikini Atoll test site shows the Baker bomb crater (the large purple circular feature) and many of the ships (oblong red features) of the sunken test fleet. U.S. Navy plans (above) show the locations of the ships in the Able and Baker test fleets.

decontamination and testing, then scuttled elsewhere. That left the 12 wrecks in Bikini, which are so close together that, if they were on land, one could visit all of them on foot in an afternoon.

The Navy dove these wrecks to retrieve scientific instruments right after the tests, but didn't linger, and returned the next year for a cursory survey. The assemblage wasn't studied in detail until the late 1980s, when the Department of Energy approached the National Park Service (NPS) Submerged Resources Center (then known as the Submerged Cultural Resources Unit, or SCRU) to assess the site archaeologically and historically and see if it could be used as a dive destination for the benefit of the Bikinians, who remain atomic refugees to this day. Delgado was the maritime historian for the NPS at the time, and joined the SCRU team, led by director Daniel Lenihan and archaeologist Larry Murphy. With Navy support,



The Japanese battleship *Nagato* pictured in a recent image (above left) and in 1938 (above right). *Nagato* was Admiral Yamamoto's flagship during the attack on Pearl Harbor and was subject to both the Able and Baker tests.

they assessed most of the wrecks in 1989 and 1990. Time and tide have reduced the radiation risk for diving there to what “can essentially be considered zero,” according to the NPS report that Delgado authored. Many radioactive products from the explosions have short half-lives, other atomic material has been dispersed, and a few inches of water is sufficient protection from almost all that remains. The dose was one-tenth what one would experience over the same period of time in an American city. The greater dangers the researchers faced were the depths to which they dove—150 feet and more—without the mixed gases and rebreather technology used today, possible wreck collapses, unexploded ordnance, and the aggressive reef sharks that showed up every day around 5 p.m.

What the team saw on the dives was remarkable. They focused much of their mapping efforts on the aircraft carrier USS *Saratoga*, which sits upright, its buckled hull and collapsed deck a testament to the power of the atomic tsunamis that tossed it around like a toy boat in a bathtub. USS *Gilliam*, the only ship within 1,000 feet of the Able blast, looked like it had been smashed with a hammer and partially melted. The heavily armored USS *Arkansas* was damaged by Able and then sent to the bottom by the collapse of Baker's water column. The submarine USS *Pilotfish* was moored underwater, where Baker's pressure wave shrink-wrapped its hull around its frames. The NPS team also dove the Japanese battleship *Nagato*, which had slipped beneath the waves, unnoticed, the night after Baker's detonation. The crippled vessel had been Admiral Yamamoto's flagship for the attack on Pearl Harbor, and somewhere inside is a compartment filled with the remains of Japanese sailors who were killed when the ship was pounded by American bombers near the end of the war and sealed inside.

The archaeologists began to see the site as a battlefield—like Little Bighorn or Pearl Harbor, both of which had been studied by the NPS. To understand it that way, they would need the technology, not available at the time, to see the entire

thing—the ships in relation to one another, the debris from the test, and material swept from the ships that were smashed and towed away. And maybe, somewhere amid the wreckage, the signature of a bomb itself. “We began to realize the complexity inherent in the seeming chaos of the detonation,” says Delgado. “That there were patterns, that there were things that survived and that there were, for lack of a better word, nuances that you could see physically reflected. But we also began to see more of the forest as we looked at each individual tree.”

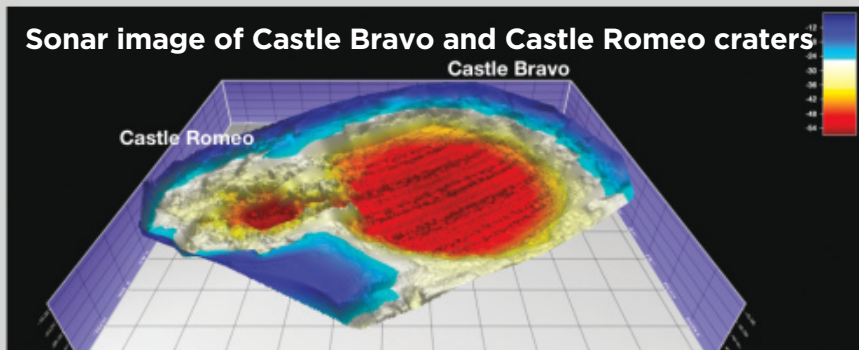
SOME 30 YEARS LATER, in early June 2019, Trembanis, Brennan, and their team assembled in Majuro, the capital of the Marshall Islands, to prep the 100-foot dive boat that would be their base and the 18-foot aluminum skiff they would use to cover a five-square-mile area with sonar pings. “After we left Majuro,” Trembanis says, “the next time we saw land was Bikini, three and a half days later.” The accuracy of sonar mapping depends on adjusting for variations in tides, water temperature, salinity, surface waves, and GPS precision. In many places there are existing tide gauges and weather stations to help, but there's none of that at Bikini. The team placed a tide gauge atop the sunken aircraft carrier *Saratoga*, measured temperature and salinity regularly, and used satellite-based GPS corrections. They had the added challenge of securely mounting their sonar devices, and a module to adjust for the shakes and shudders from waves, on their unfamiliar research vessel. “We were pushing at the limits of the sonar and the depth and the conditions,” Trembanis says. But it worked.

The result was 20 million data points, with hundreds of thousands focused on the wrecks—a digital model of the simulated battlefield. “Imagine you've been studying the Grand Canyon, but only at night with a flashlight,” says Trembanis. “And then suddenly you go during the day and you're hovering over it in a balloon.”

THE NEXT TEST

After scanning the target area of Operation Crossroads, the University of Delaware and SEARCH team cruised three hours across Bikini Atoll to a spot where it looks like a mile-wide shark took a chunk out of one of its islands, the site of the massive, gaping Castle Bravo crater. Conducted in 1954, Castle Bravo was the first nuclear test after Baker at Bikini—21

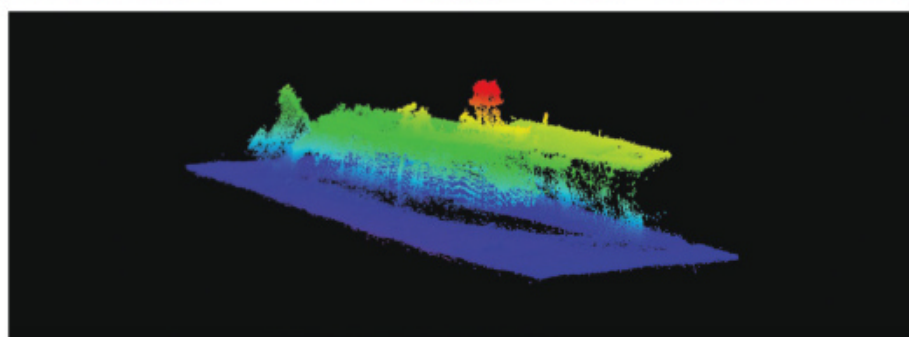
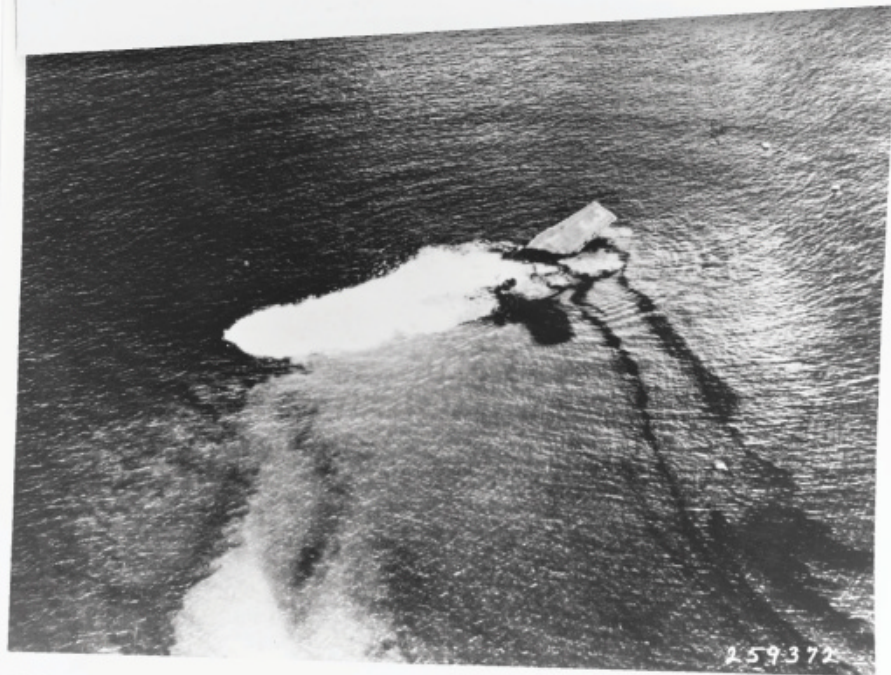
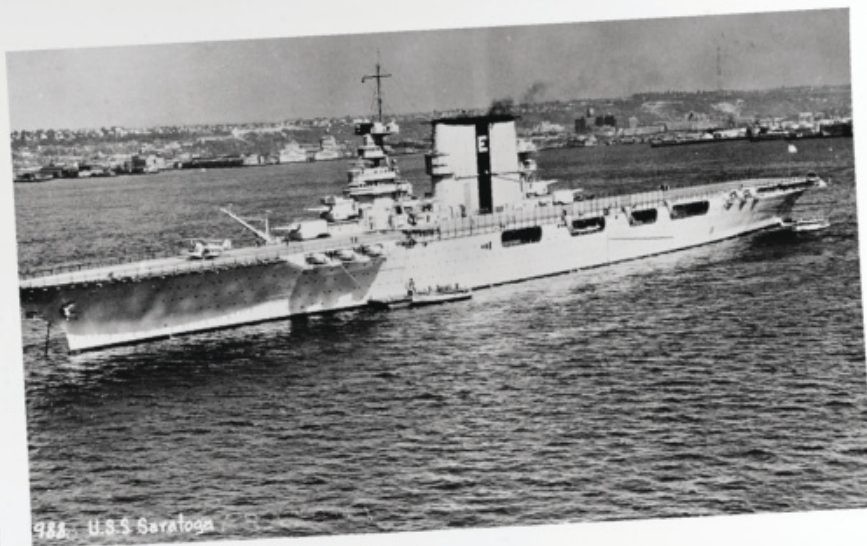
Sonar image of Castle Bravo and Castle Romeo craters



more would follow. It was a 15-megaton thermonuclear explosion equivalent to more than 700 Bakers, making it America's largest nuclear test and the second largest artificial explosion in history, dwarfed only by the Soviet Union's Tsar Bomba, which measured 50 megatons. The research team scanned the crater and revealed why it appears oblong, rather than circular as one might expect. They realized that, in fact, there is not just one crater there, but two—one from Bravo as well as a smaller but equally deep one from Castle Romeo, an 11-megaton test also carried out in 1954. Records show that several other tests were blasted in the same holes.—SSP

NUCLEAR BLASTS SEEM SOMEHOW beyond comprehension, too much power in too small a time. But they are fundamentally knowable, and the Crossroads wrecks reveal the anatomy and sequence of the explosions. By looking at the specific patterns of damage to different vessels, explains Delgado, you can actually make out what happened in the chaos of the detonations.

A few wrecks stand out in this regard, some because they don't stand out at all. Take *Gilliam*, the first ship ever sunk by an atomic blast, which suffered the worst of Able, for example. The sonar scan of the wreck appears lumpy, draped over the seabed near a large coral head. *Gilliam* was partially melted during the earliest moments of the blast, when the fireball was briefly hotter than the surface of the Sun, then slammed by Able's pressure wave, and immediately quenched as it was forced to the bottom. The submarine *Pilotfish* shows the distinctive destructive impact of Baker's hydraulic pressure wave. A fraction of a second after the detonation, the air within the sub and inrushing highly pressurized water shot through it and exited out a hole in the bow the size of a manhole cover, which the NPS team hadn't seen in their initial dives. "We have much more clarity of detail now," says Delgado. New scans reveal the breakdown of *Saratoga's* stern that was not visible 30 years ago, suggesting that the ship had come down hard on it. "It's sort



USS *Saratoga* (top to bottom): before Operation Crossroads, sinking during the Baker test, one of the ship's galleys resting at the bottom of the ocean, and in a new sonar image.



The destroyer USS *Lamson* was sunk during the Able test on July 1, 1946. The vessel had seen active service in the Pacific Theater before returning to the West Coast in November 1945.

of like the old war wound that finally acts up,” says Delgado. The researchers are seeing how the wrecks are changing over time—the continual breakdown since the NPS dives in the 1980s has been dramatic—and those changes hint at damage they incurred that wasn’t seen before.

And then there’s the Japanese vessel *Sakawa*, which was never located by the NPS team, but was found by Navy divers in the 1990s. “Our mapping reveals that there’s a very good reason for that,” Trembanis says. “Compared to these other ships that stand up proud against the seafloor, *Sakawa* is a much more subdued speed bump. Unless you have the kind of advanced multibeam mapping-type sonar systems that we brought to bear, you’d be very hard pressed to find something like it.” The team was able to reconstruct what had happened to the ship, which was a victim of both tests: Able shredded its superstructure and sank it, and then Baker slammed down on it from above, flattening it into the sediment. “None of the other ones really got killed, and then killed again,” Trembanis says.

Researchers can also see how Baker hit *Sakawa* because of where the ship lies within the blast crater, which is half a mile across, 30 feet deep, and perfectly circular. “That was a big shocker,” says Trembanis. “It looks like the Eye of Sauron. It’s a feature that wouldn’t otherwise have manifested itself unless

you do this full-scale mapping.” As in the case of the wrecks, the sonar scan of the blast crater provided levels of detail that had never been observed before. “There were subtle features that were caused by these waves of superheated gas and water as it erupted across the sea floor,” says Trembanis. They are strange, complicated things—the things a nuclear blast does to the ocean floor, the impact not just of water moving around, but of vaporization, a gas bubble imploding on itself, the ocean rushing back in. “It’s kind of new territory there,” he adds. “Genuinely a new phenomenon.”

SOME SENSE OF TIME is essential for seeing the patterns amid the complexity of the Able and Baker test site. There are the microseconds that melted *Gilliam* and made the crater. There is the shock wave, fractions of a second later, that wrung out *Pilotfish*. There are the fall of the water column and the atomic tsunamis, on the order of seconds and minutes. And then the hours over which some of the damaged ships sank. Then the weeks and months of settling into the seafloor and of Navy divers recovering instruments. Then, almost nothing for 40 years before the NPS project. And finally, another 30 years, during which almost no one apart from Navy divers and intrepid amateurs saw the wrecks. The site flattens time, but, thanks to the recent project, the time line now feels more finite and comprehensible than ever before.

Applying the methods of battlefield archaeology, which aims to understand specific conflicts through the material they leave behind, to Bikini can be illuminating, but it’s not simple. Through the wrecks and their histories, the site brings together the story of the Pacific Theater and the war beyond—a battlefield that spans a third of the world—and then scatters it again. USS *Lamson*, a naval destroyer, served in the Pacific from 1937 to 1945 before being sunk in the Able test. The German cruiser *Prinz Eugen*, a vessel subjected to both tests and then scuttled off nearby Kwajalein Atoll, had been part of the blockade breakout in the Denmark Strait in May 1941 that resulted in the sinking of the famed German battleship *Bismarck*. *Nagato* had been deeply involved in the attack on Pearl Harbor. The target ships had seen action in World War I, the Battle of the Coral Sea, Midway, the Aleutians campaign, the Magic Carpet operation that brought millions of American soldiers home at the end of the war, and more. The rest of the ships, those that were not sunk and could not be decontaminated, were later scuttled in deep water around the Pacific, off Kwajalein Atoll, Hawaii, and the West Coast. Thus, Delgado argues, the world’s only simulated nuclear battlefield is much, much larger than a remote lagoon with the greatest concentration of shipwrecks in the world. It is, he says, a powerful reminder that a global nuclear war would be the last war. Bikini is archaeologically a crossroads, the nexus of World War II before and the Cold War after, of science and the Atomic Age, of discarding and abandonment, of burial and ritual, of global spectacle and the shared culture it spawned. ■

Samir S. Patel is a journalist and photographer in New York City.

Stand Up Straight and Feel Better

Discover the Perfect Walker, the better way to walk safely and more naturally



It's a cruel fact of life, as we age, gravity takes over. Our muscles droop, our bodies sag and the weight of the world seems to be planted squarely on our shoulders. We dread taking a fall, so we find ourselves walking less and less- and that only makes matters worse.

Well, cheer up! There's finally a product designed to enable us all to walk properly and stay on the go. It's called the Perfect Walker, and it can truly change your life.

Traditional rollators and walkers simply aren't designed well. They require you to hunch over and shuffle your feet when you walk. This puts pressure on your back, your neck, your wrists and your hands. Over time, this makes walking uncomfortable and can result in a variety of health issues. That's all changed with the Perfect Walker.

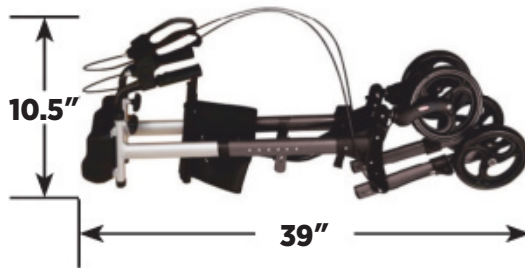
Its upright design and padded elbow rests enable you to distribute your weight across your arms and shoulders, not your hands and wrists. Its unique frame gives you plenty of room to step, and the oversized wheels help you glide across the floor. Once you've reached your destination you can use the hand brakes to gently slow down, and there's even a handy seat with a storage compartment. It's sleek, lightweight design makes it easy to use indoors and out and it folds up for portability and storage.



Comfortable
Seat

18.5"
wheelbase
for stability

Supports up
to 300 lbs.



Easy
Folding
Compact
Design

Why spend another day hunched over and shuffling along. Call now, and find out how you can try out a Perfect Walker for yourself... in your own home. You'll be glad you did.

Perfect Walker II

Call now Toll-Free **1-888-810-1937**

Please mention promotion code 112389.



“I haven’t been this excited since I got my first bicycle!”

Introducing **ZOOMER!**

The portable, folding, battery-powered chair that offers easy one-handed operation



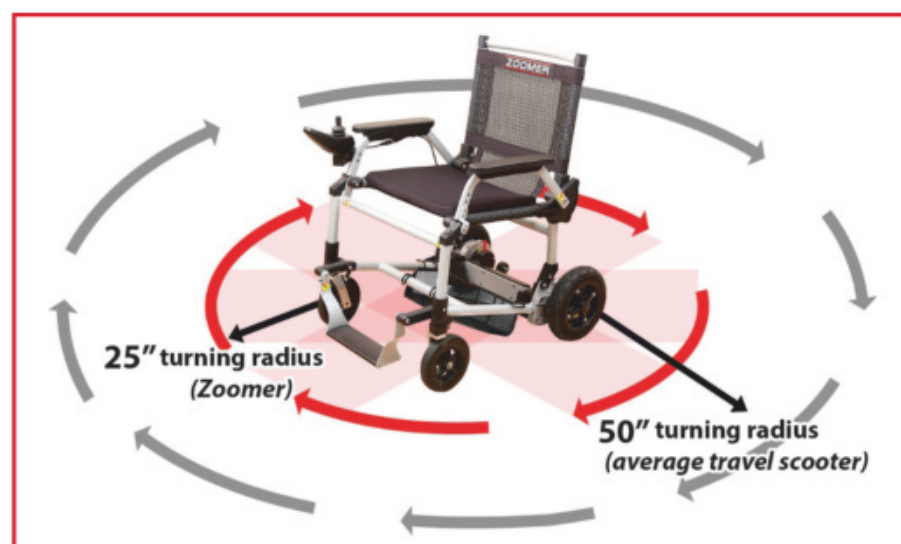
Remember when you were a child and got your first bicycle? I do. It gave me a sense of independence... I felt like I could go anywhere, and it was so much easier and more enjoyable than walking. Well, at my age, that bike wouldn't do me much good. Fortunately, there's a new invention that gives me the freedom and independence to go wherever I want... safely and easily. It's called the Zoomer, and it's changed my life.

If you are one of the countless Americans who need a little help getting around, there is a safe, simple and easy-to-use solution... the Zoomer. It is propelled by small yet powerful dual motors for speeds of 3.7 miles per hour over a variety of terrains, on up to a 10 degree incline. Its innovative airline-safe Lithium Ion battery enables you to go 8 miles on a single charge, and the automatic electromagnetic brakes let you stop on a dime.



The secret to the Zoomer is its intuitive steering system. You operate it with a simple-to-use joystick, giving you precision maneuverability and the ability to navigate tight spaces easily with a 25" turning radius. It is designed to let you pull right up to a table or desk. You no longer have to move to another chair to work or eat at your table.

What's more, it folds up easily so it can fit in a trunk or a back seat. Why spend another day watching life pass you by, when instead you could be Zooming around! Call now and a knowledgeable, friendly Zoomer expert will tell you all about it. You'll be glad you did.



Ready to get your own Zoomer? We'd love to talk to you.

Call now toll free and order one today! **1-888-348-0312**

Please mention code 112388 when ordering.

The Zoomer Chair is a personal electric vehicle and is not a medical device nor a wheelchair. Zoomer is not intended for medical purposes to provide mobility to persons restricted to a sitting position. It is not covered by Medicare nor Medicaid.

© 2020 firstSTREET for Boomers and Beyond, Inc.





The Plains of San Agustin, in west-central New Mexico, are one of the areas of the American Southwest where researchers are searching for evidence that ancient people consumed a tuber known as the Four Corners potato.

LETTER FROM THE FOUR CORNERS

IN SEARCH OF PREHISTORIC POTATOES

Native peoples of the American Southwest dined on a little-known spud at least 10,000 years ago

by LYDIA PYNE

The Plains of San Agustin stretch some 50 miles across west-central New Mexico and are surrounded on three sides by mountain ranges. In the late summer monsoon season, vibrant wildflowers make the brownish-green scrubland pop with color. Archaeologist Lisbeth Louderback of the University of Utah and botanist Bruce Pavlik of the Natural History Museum of Utah head west on U.S. Route 60 from the small town of Magdalena, then turn into a picnic area on the side of the highway. “The

Mirabilis is out, that’s good,” Pavlik says, scanning the vegetation and pointing to a short plant with purple flowers often found growing alongside or near potato plants. “Let’s see if we can find the potatoes.”

Louderback and Pavlik are looking for a tiny species of potato called *Solanum jamesii*, or the Four Corners potato, which they believe has been an often-overlooked food source exploited by people in the region for millennia. The Four Corners potato takes its name from the Four Cor-

ners area of the southwestern United States, where Arizona, Utah, Colorado, and New Mexico meet. Today, *S. jamesii* plants are relatively common across central and southern Arizona and New Mexico, but are found in only a few locations in southern Utah and Colorado—typically near prehistoric settlements. Their range also extends as far east as western Texas, and as far south as northern Mexico.

For members of Native American communities in the region, the Four Corners potato is a symbol of the con-

LETTER FROM THE FOUR CORNERS

nection many feel with their ancestors. Ethnographic and ethnohistoric accounts, as well as oral narratives, confirm that *S. jamesii* has long been well known to Native American tribes in the Four Corners area, including the Apache, Diné (Navajo), Ute, and Pueblo peoples such as the Hopi and Zuni, and is still consumed by them. Utah Diné Bikéyah, a nonprofit indigenous organization that works to preserve and protect cultural and natural resources on Native American lands, holds a dinner each October on Indigenous People's Day that features delicacies such as grilled cactus, acorn spoon bread, and cushaw squash bisque. Recently, the dinner has also included the Four Corners potato, which, in 2018, was paired with smoked river trout. "Resources like the potato are about stewardship," says Cynthia Wilson, a Diné tribal member and director of Utah Diné Bikéyah's Traditional Foods Program. "They're about reciprocity and kinship with the ecosystems and cosmos that surround them."

Almost all domesticated potatoes eaten today are of the species *Solanum tuberosum*, which



In an area near Pie Town, New Mexico, on the Plains of San Agustin, researchers survey and map Four Corners potato plants, which belong to the species *Solanum jamesii*.

was first cultivated between 7,000 and 8,000 years ago in the high Andes of modern-day Peru. Millennia later, following the Spanish conquest of the Inca Empire in the sixteenth century, the potato spread to Europe. There, it quickly became a dietary staple and, as an inexpensive source of many more calories per acre than other staples, is thought to have been instrumental in urbanization and industrialization. But

recent archaeological studies show that people in the American Southwest were consuming potatoes up to 11,000 years ago—some 3,000 to 4,000 years earlier than were people in South America.

One of the earliest sites of human occupation in the Four Corners region is North Creek Shelter in southern Utah, near the small town of Escalante. The

rock shelter is a natural feature at the base of a south-facing, buff-colored sandstone cliff on the Colorado Plateau. Between 2004 and 2008, excavations there led by Joel Janetski of Brigham Young University unearthed evidence of seven distinct periods of occupation, along with several shorter occupations between the longer ones. Radiocarbon dating of plant remains shows the earliest settlement of the site occurred some 11,500 years ago, and the last was around 150 years ago. Unlike animal bones or corncobs, whose relatively robust structures can help preserve them for long periods, potatoes have soft tissues that disintegrate over time. Therefore, they are difficult to find in the archaeological record—but that doesn't mean they aren't there.

Among the many artifacts archaeologists recovered at North Creek Shelter were 196 stone tools known as manos and metates. Manos are handheld stones used to grind raw foods against metates, or long stone slabs, into a form such as flour that can be easily consumed. Early analysis of residues from the tools focused on identifying small seeds from sage, saltbush, and grasses. In order to get a broader sense of what residents



St. Michael the Archangel

MASTERPIECE STEIN

AN EXCLUSIVE PRESENTATION
only from The Bradford Exchange

Triple-fired *Heirloom Porcelain®* stein with
Renaissance-inspired artwork from
Howard David Johnson

Richly embellished with 22K gold
decorative accents

Fully sculpted topper depicts a
triumphant St. Michael with the
vanquished beast at his feet

He is Michael. Saint, soldier angel, heavenly warrior, commander of the archangels, Archangel of Protection. And now, his noble character and glorious deeds are venerated again in art and words. The limited-edition *St. Michael the Archangel Masterpiece Stein* is a triumphant, artisan hand-crafted expression of the beauty of power and might, a masterwork you'll be proud to display.

STRICTLY LIMITED — ORDER NOW!

Strong demand is expected, so order your *St. Michael the Archangel Masterpiece Stein* now for four payments of \$29.99, for a total of \$119.99*, backed by our 365-day satisfaction guarantee. Send no moneynow. Simply mail the Reservation Application today!



22K gold
words on
the back



Custom thumb rest
with graphic of
St. Michael's shield

Impressive
11¼ inches
high

Hand-painted
sculptural horn
handle

Shown smaller than actual size
of about 11¼ inches high.



©2020 BGE 01-28820-001-BIL

Original and ONLY from The Bradford Exchange! www.bradfordexchange.com/archangel

SCAN AND
ORDER NOW!

RESERVATION APPLICATION

SEND NO MONEY NOW

The Bradford Exchange
9345 Milwaukee Ave · Niles, IL 60714-1393

YES. Please reserve the *St. Michael the Archangel Masterpiece Stein* for me as described in this announcement.
Please Respond Promptly

Mrs. Mr. Ms. _____
Name (Please Print Clearly)

Address _____

City _____ State _____ Zip _____

Email (optional) _____

*Plus a total of \$16.99 shipping and service, see bradfordexchange.com.
Limited-edition presentation restricted to 95 firing days. Please allow 4-8 weeks after
initial payment for shipment. Sales subject to product availability and order acceptance.

01-28820-001-E98001

LETTER FROM THE FOUR CORNERS



A flowering *S. jamesii* plant, found in late summer of 2019 near Magdalena, New Mexico. The plant's flowering and fruiting cycle depends on exposure to summer monsoons.

of North Creek Shelter ate over the millennia, Louderback began looking at starch residues embedded in the tools' surfaces. To her surprise, Louderback identified starch granules that belonged to *S. jamesii*. The earliest of these potato granules were found on tools dating

to between 10,000 and 11,000 years ago. The granules were also found on other tools dating to around 7,000 years ago. During both these periods, the people living at the site are believed to have been hunter-gatherers. The presence of these starch granules shows that they were grinding Four Corners

potatoes into flour and exploiting a food source that archaeologists had not previously recognized as part of their diet. "We would expect people to exploit tubers, and now we know how to look for them in the archaeological record," says archaeologist Nicole

Herzog of the University of Denver, who has worked with Louderback to establish new microscopic methods of identifying potato starches. "It's nice to find confirmation of their presence, especially at an early site like North Creek Shelter."

Although the Four Corners potato is extremely small—about the size of a walnut—it stands out for its hardness and packs a great deal of nutritional heft. Compared with domesticated white potatoes, ounce for ounce, the Four Corners spud contains twice the protein, zinc, and manganese, and three times the calcium and iron. *S. jamesii* are rather short plants with thin stalks

(continued on page 62)

Damascus steel forged to throw them for a curve at only \$79

For centuries, a Damascus steel blade was instantly recognizable and commanded immediate respect. Damascus steel's sharp edge and resistance to shattering were the stuff of legend. If you carried Damascus steel, you were ahead of the curve.

The **Damascus Curva Knife** celebrates those legendary blades. It uses modern Damascus steel, with the same rippled texture pattern on the blade, to create a curved folding knife that's 7 1/2" in total length. With a liner lock mechanism, which allows the knife to be opened and closed using just one hand, and a ergonomic handle made of buffalo horn and colored bone.

Your satisfaction is 100% guaranteed. If you don't feel like we cut you a fair deal, send it back within 30 days for a complete refund of the item price. Call today!

- Damascus steel blade & bolster
- Buffalo horn & colored bone handle
- Overall length, open : 7 1/2" • Liner lock
- Includes genuine leather sheath

Limited Collector's Edition

AHEAD OF THE CURVE

Not shown actual size.

What customers are saying about Stauer knives...
★★★★★
"Very hefty, well-built knife and sheath. Extremely good-looking and utilitarian."
— R., Lacey, Washington

Damascus Curva Folding Knife \$179*
Offer Code Price Only **\$79** + S&P **Save \$100**

1-800-333-2045

Your Insider Offer Code: CFK272-01
You must use the insider offer code to get our special price.

Stauer® 14101 Southcross Drive W., Ste 155, Dept. CFK272-01 Burnsville, Minnesota 55337
www.stauer.com

*DISCOUNT IS ONLY FOR CUSTOMERS WHO USE THE OFFER CODE VERSUS THE LISTED ORIGINAL STAUER.COM PRICE.

BONUS! Call today and you'll also receive this genuine leather sheath!

Rating of A+
BBB ACCREDITED BUSINESS

CLASSIFIEDS

BOOKS

FRESCO NIGHTS by Deborah L. Cannon. ARCHAEOLOGY, MYSTERY, ADVENTURE. "A lively, sensual, tightly-plotted novel of romantic suspense"—Barbara Kyle. Buy on Amazon.

FIELD SCHOOL

**What's your
2020 VISION?**
**Our Research Team in
Blue Creek, Belize
needs YOU!**



**Summer Sessions
June and July 2020**

**Visit our website or
call for details!**

maya
RESEARCH PROGRAM

817-831-9011
mayaresearchprogram.org

TRAVEL & TOURS

ARCHAEOLOGICAL TOURS: Yampa River: Downriver adventure in Colorado and Utah, visit remote archaeological sites. **Peru:** Visit Machu Picchu, Moche tombs, Cuzco and more. **Best of the Southwest:** Explore Acoma, Canyon de Chelly, Mesa Verde and more. **Canada:** Explore the rich history and archaeology of Ontario. archaeologicalconservancy.org/tours Archaeological Conservancy, Albuquerque, NM (505) 266-1540. tac@gmail.com

Canyonlands Field Institute
Archaeology and Native Culture Trips in Utah. Lodge, river, hiking options. Small groups, guest experts. cfimoab.org (435)259-7750



Keel-billed Toucan

Caravan's Costa Rica 2020. Your Year to Go!

Costa Rica

9-Day Tour \$1295 + tax, fees

Volcanoes, Rainforests, Beaches

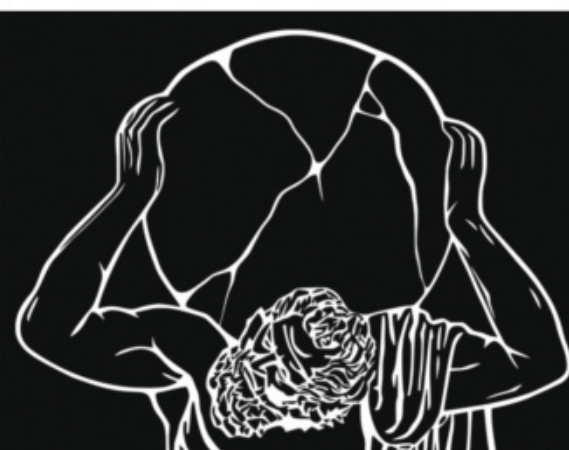
You are invited to Costa Rica on a fully guided tour with Caravan. Includes all hotels, all meals, and all activities. Call now for choice dates. Pura Vida! **caravan**

Choose an Affordable Tour + tax, fees		
Costa Rica	9 days	\$1295
Guatemala w/ Tikal	10 days	\$1395
Panama & Canal	8 days	\$1295

FREE 24 Page Brochure

1-800-caravan caravan.com

caravan
FULLY GUIDED TOURS SINCE 1952



atlaspreservation.com

**America's Preservation
Product Superstore &
Specialty Archeology Supply**

Strati Concept: Archeological Supplies
IdealSpaten Shovels & Digging Tools
AEO Handmade Screens
Sneeboar Trowels & Shovels
Stringliner Stakes, Lines, Tapes
Marshalltown Trowels
Pratley, Akemi, & Tenax Adhesives
Otterbein Natural Hydraulic Lime
D/2 Biological Sultion: Stone Cleaner
Metal Cleaning & Conservation
Lifting & Rigging

Projects • Training • Consulting

(860) 426-3111

Photo Credits

COVER—Photo by Malte Heitmüller/@malteheitmueller; 1—Aron Arngrimsson; 3—(clockwise from top left)—Courtesy Kathryn Murphy, Photo/UC Classics, Museum of London, NTNU University Museum, Photo Archive of Thera Akrotiri Excavations; 4—Azoor Photo Collection/Alamy Stock Photo; 6—Photo by E.S. Greene/Courtesy of Marzamemi Maritime Heritage Project; 9—© The Trustees of the British Museum; 10—Marius Dobilas/Alamy Stock Photo; 11—Courtesy Kathryn Murphy (3); 12—Photo Archive of Thera Akrotiri Excavations, Courtesy Tyler Olsen/Colorado State University's Center for the Environmental Management of Military Lands; 13—Courtesy Ratno Sardi (2); 14—(clockwise from top left) NTNU University Museum, Manuel Gabler/NIKU, Arkeologerna Statens historiska museer, NTNU University Museum, NTNU University Museum; 16—Reconstruction by Fran Weatherhead, The Amarna Project, Photo: T. Nakajima; 18—(clockwise from top) Photo/UC Classics, Aerial photo/Denitsa Nenova/UC Classics (2), Photo/Vanessa Muro/UC Classics; 19—Charles J. Sharp via Wikimedia Commons, Courtesy Sophie Flynn/Colchester and Ipswich Museum Service; 20—Museum of London (2), Courtesy Sara Juengst (2); 21—Courtesy Michael Harrower (5); 22—(clockwise from top left) Wikimedia Commons, Theis Jensen, Florida Museum of Natural History, Provided by Yamagata University, Edith Camancho/INAH; 23—(clockwise from top left) Courtesy of Scott D. Haddow, Novosibirsk Institute of Archaeology and Ethnography, Wikimedia Commons, Tim Schoon/University of Iowa, Provided by George Ferentinos; 24-25—EUNAN SWEENEY/Alamy Stock Photo; 26—Courtesy Thomas Finan and James Schryver; 27—Courtesy Thomas Finan; 28—robertharding/Alamy Stock Photo; 29—Courtesy Niall Brady, Courtesy Thomas Finan; 30—Bridgeman Images, © British Library Board/Robana/Art Resource, NY (2); 31—Courtesy Thomas Finan; 32—Reproduced with permission of Colin Hope/Dakhleh Oasis Project (2); 32-33—Photograph by Ewa Kuciewicz; 34—Ny Carlsberg Glyptotek, AEIN 614, Photo: Ole Haupt; 35—Werner Forman Archive/Egyptian Museum, Cairo, HIP/Art Resource, Reproduced with permission of Colin Hope/Dakhleh Oasis Project; 36—Reproduced with permission of Colin Hope/Dakhleh Oasis Project (3); 37—Reproduced with permission of Colin Hope/Dakhleh Oasis Project (2); 38—Bayt Ras Tomb Project, a consortium of the USAID Sustainable Cultural Heritage Through Engagement of Local Communities Project, Istituto Superiore per la Conservazione ed il Restauro, Department of Antiquities of Jordan, French Institute for the Near East, and French National Center for Scientific Research; 39—Bayt Ras Tomb Project, a consortium of the USAID Sustainable Cultural Heritage Through Engagement of Local Communities Project, Istituto Superiore per la Conservazione ed il Restauro, Department of Antiquities of Jordan, French Institute for the Near East, and French National Center for Scientific Research (2); 40—Bayt Ras Tomb Project, a consortium of the USAID Sustainable Cultural Heritage Through Engagement of Local Communities Project, Istituto Superiore per la Conservazione ed il Restauro, Department of Antiquities of Jordan, French Institute for the Near East, and French National Center for Scientific Research (2); 41—Bayt Ras Tomb Project, a consortium of the USAID Sustainable Cultural Heritage Through Engagement of Local Communities Project, Istituto Superiore per la Conservazione ed il Restauro, Department of Antiquities of Jordan, French Institute for the Near East, and French National Center for Scientific Research (2); 42—Courtesy Gabriel Prieto (5); 44—Courtesy Angiolina Abugattas, Courtesy Gabriel Prieto; 45—Courtesy Gabriel Prieto (2); 46—Courtesy Gabriel Prieto (2), Courtesy Christopher Donnan; 47—Courtesy Gabriel Prieto; 48-49—Image by Pete Mesley Lust4Rust Dive Excursions; 50—National Archives (2); 51—Courtesy Art Trembanis, National Archives (2); 52—Image by Pete Mesley Lust4Rust Dive Excursions, Naval History and Heritage Command; 53—Naval History and Heritage Command, National Archives, Image by Pete Mesley Lust4Rust Dive Excursion, Courtesy Art Trembanis; 54—Aron Arngrimsson; 57—©2020/Jerry Redfern; 58—Lydia Pyne; 60—Lydia Pyne; 62—NCS Collections held at BYU Museum of Peoples and Cultures, Courtesy Joel Janetski; 63—Courtesy Cynthia Wilson, Courtesy Lisbeth Louderback; 64—Ron Reznick/VWPics/Alamy Stock Photo; 68—Courtesy INRAP

LETTER FROM THE FOUR CORNERS

(continued from page 60)

and small, delicate, oblong leaves. Although they tend to grow best in fertile, silty soils like those found in shallow drainages, the plants are robust enough to survive in a host of different growing environments, such as mulch, gravel, and pine needles. The plant is thus well adapted to the complex piñon-juniper ecology of central New Mexico, where it is most abundant, as well as to the broader landscape of the Four Corners.

Like any other potato variety, whether wild or domestic, *S. jamesii*'s tubers are attached to the plant's roots. These tubers save up nutrients to help the plant survive stressful times of year—winter, for example—and to store sufficient energy to thrive during the next growing season. Whether collected or cultivated, tubers offer a food that is chock-full of the plant's naturally stored nutrients. Four Corners potatoes grow close to the surface, making them relatively easy to dig up. In addition, one *S. jamesii* plant can produce up to 500 small "progeny tubers" (also called potatolings) in a single growing season, thus dramatically increasing the overall number of potatoes produced. Consequently, there are enormous benefits to



A mano (above left), or handheld stone, which was used to grind raw foods against a metate (above right). Both artifacts were excavated at North Creek Shelter in southern Utah and found to contain *S. jamesii* starch granules dating back at least 8,000 years.

using the tuber as a dietary resource. "In prehistory, the potato would have provided a reliable source of carbohydrates, protein, and minerals to hunter-gatherers in the American Southwest and significantly improved dietary quality," Louderback says. "If this species was cultivated or domesticated, then its benefits would be amplified. Foraging would be replaced by tending, and the assurance of a harvest would remove uncertainties that resulted from climatic variations."

S. jamesii plants can survive multiple years of drought conditions, as the flowering and fruiting cycle of the plant depends heavily on its exposure to moisture during the July through August monsoon season. During periods of ecological stress, such as in drought years, it becomes nearly

inactive. "*Jamesii* is so remarkable among potatoes," says geneticist John Bamberg of the USDA Potato Genebank. "It has the most resistance of any species to late blight, which is the worst fungal potato disease, and it has strong resistance to the Colorado potato beetle. The tuber can survive freezing temperatures and

can be dormant for up to fourteen years." However, one challenge to using *S. jamesii* as a food source is that the potatoes are naturally high in glycoalkaloids, compounds that are extremely bitter to the taste. Chemist David Kinder of Ohio Northern University notes that preparing the potato in a type of mineral clay called bentonite makes it more palatable by sweetening its taste when it is cooked. According to Cynthia Wilson, it was—and still is—common to boil the tubers in white clay to reduce their bitterness and make them edible. "In Navajo, we call this *glēsh*—potato clay," she says.

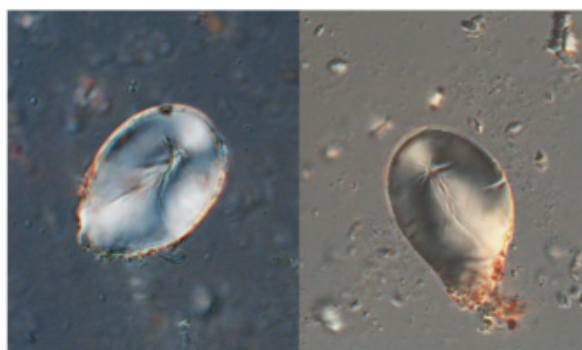
Native peoples of the American Southwest are believed to have cultivated corn, squash, and beans as early as 4,000 years ago. Known as the "three sisters," these crops were originally domesticated in Mesoamerica and later brought north. Now that archaeologists have uncovered millennia-old evidence that potatoes, which are indigenous to the Southwest, were consumed in the area as well, they are trying to learn whether the tubers were cultivated in addition to being harvested from naturally occurring stands. In the summer of 2019, Louderback and Pavlik searched the Plains of San Agustin for living *S. jamesii* plants. They operated on the theory that if the plants were found in association with ancient dwellings, this would indicate that ancient peoples may have intentionally cultivated



North Creek Shelter, located at the base of a sandstone cliff, was first occupied around 11,500 years ago. People living at the site ate Four Corners potatoes at least 10,000 years ago.

them. In the past, particularly at the northern extent of the species' range, in southern Utah and Colorado, the potatoes have indeed been identified almost exclusively near ancient settlements. "The question was why," Loud-erback says. "Why would so many potato plants be so close to habitation structures, but not appear in other places across the landscape?" The potato plants were there, researchers hypothesized, because ancient people had planted them.

During surveys led by Kinder, researchers found substantial populations of *S. jamesii* growing at several archaeological sites in Colorado and New Mexico that were inhabited by Ancestral Puebloans in the late first to early second millennium A.D. Ancestral Puebloans cultivated corn, beans,



Four Corners potatoes (left) are about the size of walnuts. Microscopic images (below left) of *S. jamesii* starch granules were identified on stone tools excavated at North Creek Shelter.

and squash, and Kinder believes the evidence suggests that, at least at some sites, they grew potatoes as well. The present-day potato populations found near Ancestral Puebloan buildings, he suggests, could be descended from plants that were tended in garden patches hundreds of years ago. "We think that the wild potatoes were cultivated," says Kinder, "and that numerous modern stands of this plant in the Four Corners region are legacy populations reflecting ancient management."

At Mesa Verde in the southwestern corner of Colorado, a site known for its cliff dwellings, researchers

TECHNOLOGY SIMPLIFIED – BIGGER AND BETTER

Wow! A Simple to Use Computer Designed Especially for Seniors!

Easy to read. Easy to see. Easy to use. Just plug it in!



"I love this computer! It is easy to read and to use! I get photo updates from my children and grandchildren all the time."

— Janet F.

Have you ever said to yourself "I'd love to get a computer, if only I could figure out how to use it." Well, you're not alone. Computers were supposed to make our lives simpler, but they've gotten so complicated that they are not

worth the trouble. With all of the "pointing and clicking" and "dragging and dropping" you're lucky if you can figure out where you are. Plus, you are constantly worrying about viruses and freeze-ups. If this sounds familiar, we have great news for you. There is finally a computer that's designed for simplicity and ease of use. It's the WOW Computer, and it was designed with you in mind. This computer is easy-to-use, worry-free and literally puts the world at your fingertips. From the moment you open the box, you'll realize how different the WOW Computer is. The components are all connected; all you do is plug it into an outlet

and your high-speed Internet connection. Call today to find out more about the WOW Computer!

- Send & Receive Emails
- Have video chats with family and friends
- Surf the Internet: Get current weather and news
- Play games Online: Hundreds to choose from!

Call now toll free and find out how you can get the new WOW! Computer.

Mention promotional code 112390 for special introductory pricing.

1-888-684-2237



© 2020 firstSTREET for Boomers and Beyond, Inc.



LETTER FROM THE FOUR CORNERS



A cliff dwelling at Chapin Mesa, part of Mesa Verde in southwestern Colorado, was inhabited by Ancestral Puebloans around 1,000 years ago. Several stands of Four Corners potato plants have been found at the site.

found several *S. jamesii* populations in association with ruins, including one “mega-population” in Navajo Canyon below Chapin Mesa that measured a mile long and up to 100 yards wide. At Chaco Canyon in northwestern New Mexico, home to ancient multistory buildings, another mega-population was found stretching along a two-mile length of arroyo. And, at Chimney Rock, in southwestern Colorado, some 60 miles east of Mesa Verde, the potatoes were found growing near constructed dams, as well as amid rubble from ancient houses. Given Chimney Rock’s high elevation, more than 7,000 feet above sea level, and its remoteness from other wild potato populations, Kinder suggests the potato plants may have been transported and intentionally planted there. Since Mesa Verde and Chaco Canyon are also at the northern reach of the potato’s range and isolated from other stands, it is likely *S. jamesii* was planted at these sites, too. In addition, by studying the mega-population in Mesa Verde’s Navajo Canyon, researchers have determined that its potato plants include the vast majority of genetic variations known to occur in the species. According to Kinder, this indicates that Mesa Verde served as a sort of gene bank, a place where potatoes could be grown centrally and then

dispersed, offering a steady supply of plants that could be grown elsewhere.

The question of whether potatoes were cultivated near North Creek Shelter, where evidence of potato consumption dates back to many thousands of years before the Ancestral Puebloan potato patches, is more complicated. Just five small populations of potato plants have been found in the Escalante Valley. One is some 500 feet from North Creek Shelter, while the next closest is nearly 100 miles away, near the archaeological site of Newspaper Rock. However, even if this were evidence that potatoes were cultivated rather than simply harvested at North Creek Shelter, the question of when cultivation first occurred would remain open, given that the site was occupied as recently as 150 years ago. Indeed, when nineteenth-century settlers from the Church of Jesus Christ of Latter-day Saints arrived in the area near Escalante, they called it “Potato Valley,” and descendants of these early settlers described eating *S. jamesii* potatoes throughout the Great Depression as a supplement to other crops. “Detecting the early stages of *S. jamesii* domestication would challenge a long-established scientific paradigm regarding agricultural origins and food choices among hunter-gatherers in North America,” Louderback says. “It

would identify the Four Corners as a previously unknown center of plant domestication.”

Back on the Plains of San Agustin, Louderback, Pavlik, and their colleagues carefully flag potato plants. Some have delicate white and yellow flowers, and a few have fruit. The researchers map the plants with GPS points to plot out their density and distribution, much as archaeologists would flag pottery sherds to identify areas of habitation, and collect samples so geneticists can continue to assess the genetic diversity of *S. jamesii*. Researchers hope these samples will help them tease out patterns of how the species moved—or was moved by ancient peoples—across the landscape.

After two days of surveying plants around Magdalena, the researchers split up into smaller teams and disperse throughout the Four Corners area to cover as much ground as possible in the upcoming week. One team heads north to Chaco Canyon and then to Chimney Rock. Another team goes east, to Texas. Louderback and Pavlik point their SUV west, toward the Show Low region of the Mogollon Rim in Arizona. As they climb into their vehicles, Louderback explains that, in a few weeks, they are going to do an additional survey to the northwest, in the Bears Ears area of southern Utah.

In the end, due to drought conditions, Louderback identifies plants at only half the sites she visits. “We found some good samples in Chaco Canyon and in Escalante, but none in Bears Ears,” she reports. “We’ll probably have to go out again next year.” And, if history is any indication, the Four Corners potato will be there, just as it has been for the last 11,000 years. ■

Lydia Pyne is a writer based in Austin, Texas.



121ST AIA-SCS JOINT ANNUAL MEETING IN WASHINGTON, D.C.



Marriott Marquis, Washington, DC

The AIA began 2020 in Washington, D.C., at the Institute's 121st Joint Annual Meeting, January 2 to 5. More than 2,400 archaeologists, classicists, philologists, and archaeology enthusiasts participated in an academic program that included more than 80 sessions. This year's meeting also featured 18 roundtable discussions, such as "Classics for Business Leaders" and "Best Practices

to Grow Societies." The complete program is available at archaeological.org/meeting/program.

Kathleen Lynch, AIA Trustee and professor of classics at the University of Cincinnati, presented the opening night public lecture, "Conversations with a Pot Whisperer: Archaeological Ceramics and the Stories They Tell." This fascinating and well-attended public lecture was followed by the opening night reception, which was also a great success.

In addition to the academic program, the AIA hosted ArchaeoCon and Trivia Night, two events that debuted at last year's meeting. ArchaeoCon and Trivia Night offer informal opportunities for attendees to socialize and network, and the majority of attendees at



Public lecture



Archaeocon 2020



Roman reenactors, Archaeocon 2020

ArchaeoCon were non-AIA members who came specifically for the event.

ArchaeoCon 2020 was a daylong event open to the public, headlined by historical archaeologist and educator Alexandra Jones, maritime archaeologist James Delgado, and TV personality Josh Gates. More than 400 people attended. ArchaeoCon included an activity fair with 13 archaeological, historical, and scientific organizations hosting tables of displays and activities such as reconstructing pottery, reading maps, making corn-husk dolls, and learning about ancient Rome from a group of Roman reenactors. During the AIA's second Trivia Night, six teams answered archaeology-themed questions that ranged from identifying ancient sites to testing their knowledge of the Indiana Jones movies.

The 121st AIA-SCS Joint Annual Meeting was a fantastic way to kick off 2020 and we hope you will join us in 2021 when the meeting moves to Chicago.



DISPATCHES

FROM THE AIA
EXCAVATE • EDUCATE • ADVOCATE

ARCHAEOLOGY EDUCATORS GATHER AT THE AIA ANNUAL MEETING



Education Summit 2020

The Archaeology Education Summit was the latest in a series of meetings for archaeology educators hosted by the AIA. The goal of these meetings is to develop and foster collaboration among archaeology educators, to provide a forum for educators to discuss issues, challenges, and successes, and to define a vision for archaeology education, including goals, principles, and the creation of a statement of ethics.

Participants in the summit, which was moderated by a facilitator from the National Park Service, included representatives from the Archaeological Institute of America, American Anthropological Association, American Schools of Oriental Research, Bureau of Land Management, Florida Public Archaeology Network, Howard University, National Park Service, Project Archaeology, Society for American Archaeology, Society for Historical Archaeology, and the Heritage Education Network.

The main topic of discussion at the summit was the Heritage Education Statement of Ethics. This document, created by educators at the previous meeting, is intended to be used as a guideline for those who are already presenting archaeological education activities or are planning to do so in the future. The most significant outcome of the D.C. meeting was group-wide acknowledgment that further refining of the statement of ethics needs to include a wider and more diverse group of participants. Therefore, the AIA is discussing the possibility of organizing a larger conference to draft a statement, or series of statements, to address ethical issues and best practices for archaeological education and outreach. We will be posting more information on this topic on the AIA website in the coming months.



AIA Award winners 2020

AIA AWARD WINNERS

Congratulations to all!

- Outstanding Public Service Award: Patty Gerstenblith
- Award for Outstanding Work in Digital Archaeology: Flowerdew Hundred Project, accepted by Anastasia Dakouri-Hild
- Excellence in Undergraduate Teaching Award: M. Kathryn Brown
- Felicia A. Holton Book Award: *Deep Time Dreaming* by Billy Griffiths
- James R. Wiseman Book Award: *The Iranian Expanse* by Matthew P. Canepa
- Conservation and Heritage Management Award: Katherine Miller Wolf
- Graduate Student Paper Award: Cai Thorman
- Graduate Student Paper Award, Honorable Mention: Victoria Moses
- Martha and Artemis Joukowsky Distinguished Service Award: William and Suzanne Murray
- Pomerance Award for Scientific Contributions to Archaeology: Heather Lechtman
- Gold Medal Award for Distinguished Archaeological Achievement: Jack Davis
- Best Poster:
Materials in a Fayum Mummy Portrait and Its 1920s Restoration
Christina Bisulca, Ellen-Hanspach Bernal, and Aaron Steele, Detroit Institute of Arts
- Runner-Up:
Re-Inventing the (Potter's) Wheel: Modeling 3-D Vessels from 2-D Drawings
Christian F. Cloke, Ella D. Breden, Quint Gregory, and Emily C. Egan, University of Maryland, College Park
- Best Poster Designed by a Graduate Student:
The Roman Villa and Late Roman Child Cemetery at Poggio Gramignano (Lugnano in Teverina, Umbria): Report on the 2019 Field Season
David Pickel, Stanford University, Jordan Wilson, University of Arizona, and Roberto Montagnetti, Independent Researcher
- Best Poster Designed by an Undergraduate Student:
Archaeometric Analysis of Southern Methodist University Bridwell Library's Brick from Ur
Rachel M. Thimmig, Southern Methodist University

Travel · Support · Learn with the AIA

Travel



ARCHAEOLOGICAL INSTITUTE
OF AMERICA TOURS

AIA Tours.org

The Legacy of the **Etruscans:** Latium, Umbria & Tuscany

October 9-20, 2020 (12 days | 16 guests)
with archaeologist Lisa Pieraccini

A selection of more than 30 travel opportunities in 2020:

IRELAND'S ANCIENT EAST

May 26-June 8, 2020 (14 days | 12 guests)
with geoarchaeologist Stephen Mandal



HIKING SCOTLAND'S NORTH HIGHLANDS & ISLE OF LEWIS

July 13-23, 2020 (11 days | 15 guests)
with archaeologist Mary MacLeod Rivett



HUMAN ORIGINS IN SOUTH AFRICA

Aug. 30-Sept. 13, 2020 (15 days | 16 guests)
with paleoanthropologist William Harcourt-Smith



OMAN & ZANZIBAR

Sept. 26-Oct. 14, 2020 (19 days | 12 guests)
with anthropologist & architectural historian
Trevor Marchand



THE LEGACY OF ANCIENT ROME: ART, ARCHITECTURE & CUISINE

October 2-13, 2020 (12 days | 18 guests)
with archaeologist Al Leonard, Jr.



BACK FOR 2020!

THE BEST OF ANCIENT PERU

October 12-26, 2020 (15 days | 15 guests)
with archaeologist Jo Burkholder

call: 800-748-6262 • website: www.aiatours.org • email: aia@studytours.org • follow: on Facebook @aiatours.org

From the Middle Ages through the nineteenth century, the city of Amiens in the Somme River Valley north of Paris was famous for its thriving textile industry. But industry was not new to Amiens. More than 20,000 years ago, Paleolithic hunter-gatherers set up seasonal camps in what is now the neighborhood of Renancourt in the southwest section of the city and lived there for a few weeks at the end of each summer. There they made projectile points, knives, scrapers, and jewelry. And one talented artist—or artists—began to carve small female figurines. This example, the Venus of Renancourt, was recently discovered 12 feet below the ground in the same area where 14 other tiny female figurines have been unearthed since 2015. Found alongside them were thousands of chalk fragments that appear to be waste from the production of these diminutive sculptures.

According to archaeologist Clément Paris of France’s National Institute of Preventive Archaeological Research, the site at Renancourt provides rare evidence for modern humans in this region during the Gravettian period (28,000–22,000 years ago). Although the other 14 female figurines—a collection that has doubled the number of such sculptures known from Paleolithic France—are distinctive, Paris explains that the quality and level of detail of this new find have surprised archaeologists. “The hairstyle, in particular, is represented by fine incisions in the form of a grid,” he says. Although other archaeological deposits from the same period are known to have been the remains of workshops, they are from earlier excavations dating to the 1950s, when modern techniques were not available. “In the coming years, we want to try to understand how the figurines were made,” says Paris, “and to explain the purpose of these still-enigmatic artifacts.”

WHAT IS IT
“Venus” figurine
CULTURE
Gravettian
DATE
23,000 years ago
MATERIAL
Chalk
FOUND

SIZE
1.57 inches tall



AtlasPreservation.com

(860) 426-3111

*America's Preservation
Product Superstore &
Specialty Archeology Supply*

Jonathan Appell performing
conservation work on
"The Knight's Tomb" - circa 1627
Memorial Church, Jamestown, VA.

